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INTERNATIONAL MONETARY FUND

REPUBLIC OF LATVIA

Selected Issues

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Approved by the European Department

September 19, 2006

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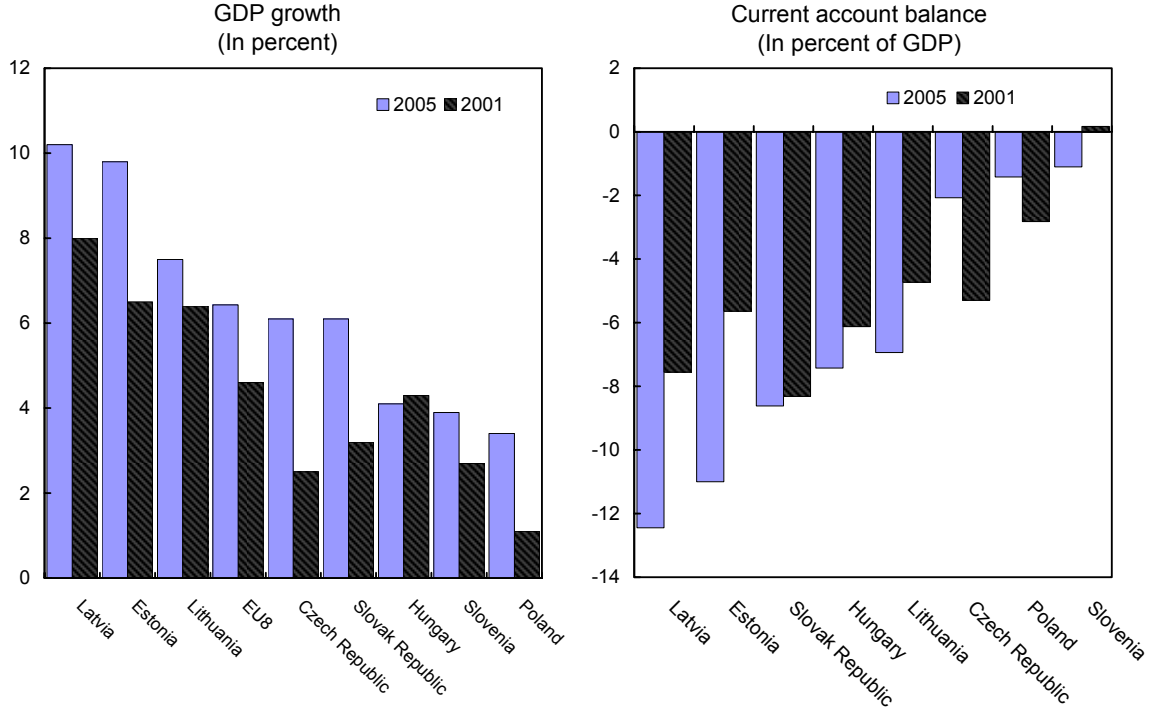
A. Introduction

1. **From a starting position of already rapid growth and sizable external imbalances, Latvia has seen its GDP growth rate accelerate and its current account deficit widen further in recent years** (Figure 1). This chapter explores the causes of Latvia's heavy dependence on foreign savings, particularly the contribution of integration-related factors resulting from deepening ties with EU product and financial markets. In addition, the chapter examines the composition of Latvia's external liabilities, which sectors have benefited from foreign savings, whether exposure to market risks has unduly increased, and whether Latvia has transformed the product mix of its exports. In doing so, this chapter draws together growth theory, external sustainability analysis, assessment of balance-sheet vulnerabilities, and analysis of the product-structure of exports.

Figure 1: EU8: GDP Growth and Current Account Balance



Sources: Country authorities; and Fund staff calculations.

[1] Prepared by Gavin Gray and Ken Miyajima.

2. **Latvia's large and widening current account deficit appears broadly consistent with the literature on catching-up and integrating economies**. Blanchard and Giavazzi (2002) show that as goods and capital markets became more integrated with the rest of the world, countries with prospects for more rapid growth than their trading partners will run larger current account deficits. In Latvia's case, the post-communist transition, preparations for EU membership and accession itself, as well as initial preparations for eventual euro adoption have fostered deeper trade and financial linkages with EU partners and the rest of the world. Notwithstanding, at 12½ percent of GDP in 2005, Latvia's current account deficit is larger than in other EU8 countries, and also than in the southern European countries when they were at a similar stage of integration. This suggests that integration forces are exerting a stronger effect in Latvia or that other factors are also at work in determining the size of the current account deficit.

3. **A consequence of sustained large current account deficits has been the build-up in net foreign liabilities (NFLs)**. From near zero in 1995, NFLs grew to nearly 60 percent of GDP at end-2005. These liabilities must be serviced and the debt portion eventually repaid (Lane and Milesi-Ferretti, 2006). To do so requires increasing exports and/or reducing imports. This would be straightforward if foreign savings have been used to build additional capacity in the tradables sector. If not, resources will need to shift from nontradable to tradable sectors. However, if factors of production are largely immobile across sectors, adjustment will need to come through demand compression, with a significant negative effect on the welfare of Latvian households and firms.

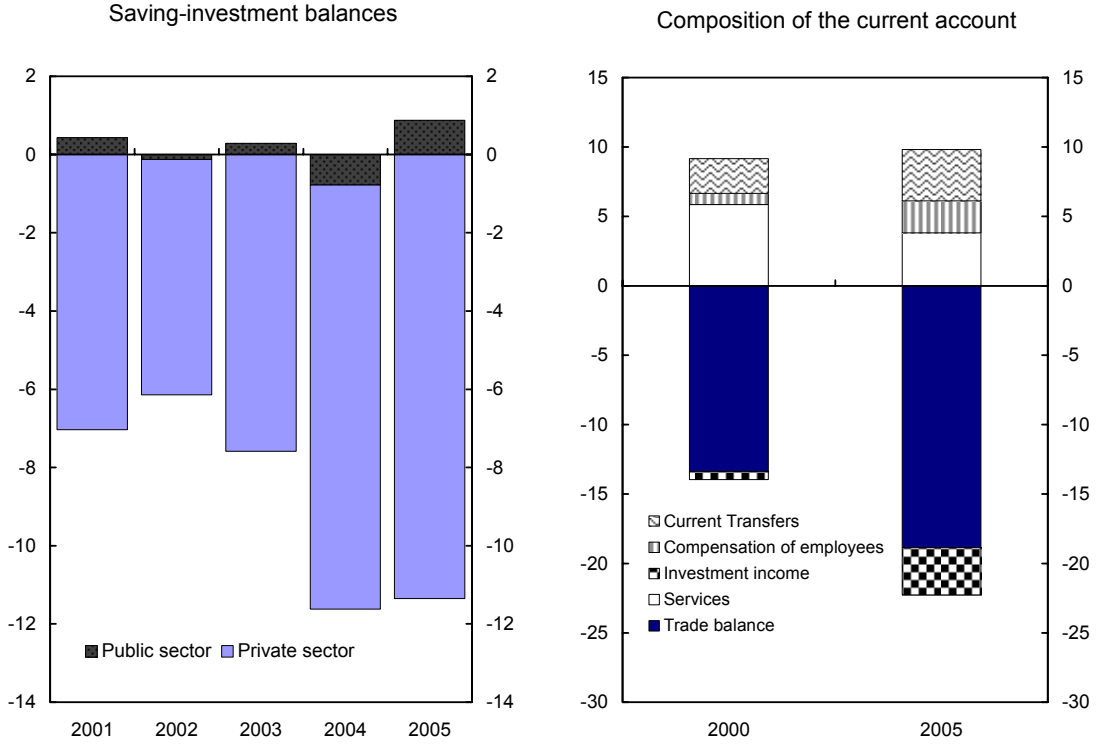
4. **This chapter is structured as follows.** Section B presents recent trends in Latvia's current account deficit, and examines whether these are consistent with rapid integration and income convergence. Section C then analyzes the magnitude and composition of the country's external liabilities, providing evidence on how capital inflows have been deployed and offering some indication of how readily the economy will be able to generate exports to service its foreign liabilities. This is complemented with an analysis of how accumulation of external liabilities and domestic credit have influenced sectoral balance-sheet mismatches in order to broaden the picture of vulnerabilities. Section D assesses how much the current account would need to adjust in order to stabilize NFLs. Based on the current product composition of Latvia's exports, section E explores whether export growth can plausibly be expected to deliver the needed current account adjustment. Section F offers some conclusions.

B. Latvia's Current Account Deficit

5. **Latvia's current account balance can be attributed primarily to persistent private sector dissaving**. Several standard explanations for the existence of current account deficits do not apply in Latvia's case. Across a wide range of countries, large current account deficits often coincide with sizable dissaving by the public sector, leading to the phenomenon of twin deficits. However, in Latvia, the public sector was a small net saver on average

during 2001–05 (Figure 2). Instead, the counterpart to Latvia's current account deficits has been large dissaving by the private sector. This private dissaving is reflected mainly in the widening of the trade deficit, which accounted for three-quarters of the increase in the current account deficit during 2000–05.

Figure 2. Latvia: Saving-Investment and Current Account Balances, 2000-05
(In percent of GDP)



Sources: Latvian authorities; and Fund staff calculations.

6. The extensive liberalization and integration of the goods and financial markets that accompanied closer ties with the EU are likely to have significantly changed the opportunity set facing Latvia's private sector. According to Blanchard and Giavazzi (2002) these factors account for much of the widening of current account deficits in the less-advanced euro-area members over the past decade, and these considerations are also relevant for new EU members. In an intertemporal optimizing framework, the current account surplus at time t is given by:

$$CA_t = \frac{1}{2}\left\{1 - \frac{1}{1+x_t}\left(\frac{1+g^e{}_t}{1+g^{e*}_t}\right)^{1-\frac{1}{\sigma_t}}\right\} \qquad (1)$$

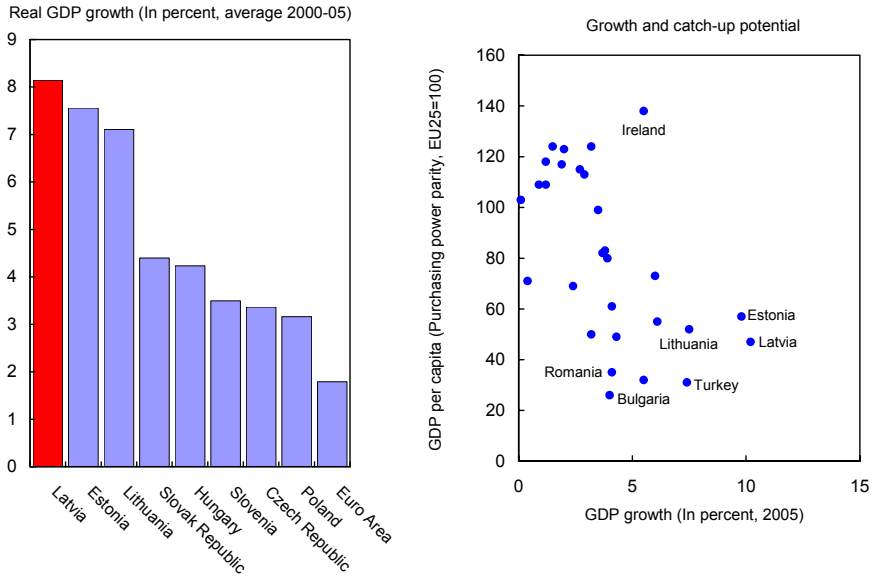
where g_t^e and g_t^{e*} denote, respectively, expectations of future domestic and world growth, x_t is the country's cost of borrowing expressed as a spread over world interest rates, and σ_t

(which is greater than one) is the elasticity of substitution in demand between goods produced locally and in the rest of the world. This relationship implies that the current account surplus is a decreasing function of g_t^e, a positive function of borrowing costs, and a negative function of the elasticity of substitution. Therefore, lower borrowing costs, more rapid future domestic growth and a larger elasticity of substitution (which indicates how much real exchange rate adjustment is needed to induce foreigners to buy domestic goods) tend to widen the current account deficit.

7. **To determine whether this approach can help explain the widening of Latvia's current account deficit, we explore developments in each of these parameters**.

- **Expectations of Latvia's future growth prospects are likely high, and may have risen in recent years**. With expectations likely to be formed in a backward-looking manner, the recent acceleration in growth has probably led to expectations that this performance will continue (Figure 3). The Latvian authorities estimate potential growth at 8 percent for 2005, significantly higher than estimates of potential for the euro area—a possible proxy for g_t^e. GDP per capita may also provide an indication of growth prospects since it captures the scope for income convergence, and convergence rates are likely to be faster the larger is the income gap. As the poorest of the EU25, Latvia has the greatest potential for catch-up among the current member states. However, its future growth rates may not be as rapid as those recently observed, or as strong as the acceding and candidate countries (four of which have even lower levels of GDP per capita).

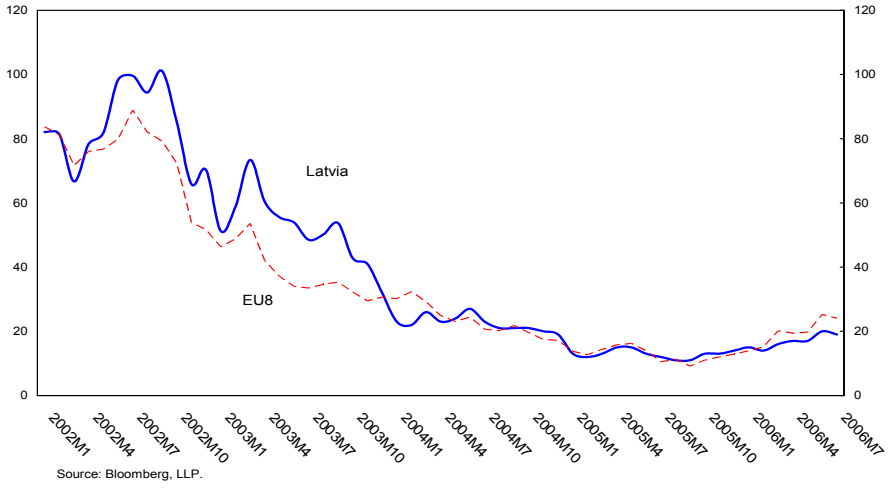
Figure 3. Latvia and Selected European Countries: Growth and Catch-up Potential



Sources: Latvian authorities; WEO; Eurostat; and Fund staff calculations.

- **Latvia's borrowing costs on international markets have declined sharply**. Consistent with patterns in other EU8 countries, spreads on Latvia's outstanding government Eurobonds fell from 80 basis points in 2001 to 12 basis points in mid-2005, but in Latvia these have since edged up to 20 basis points (Figure 4). Private-sector borrowing costs are likely to have tracked the sovereign spread, suggesting that Latvian enterprises and banks have seen a similar substantial decline in their cost of foreign borrowing.

Figure 4: Sovereign Borrowing Spread
(In basis points)



Source: Bloomberg, LLP.

- **In contrast to the previous two factors, which supported an increase in the current account deficit, changes in the elasticity of substitution could have had a dampening effect**. This variable indicates how much the relative price of Latvian export will need to fall to induce foreigners to buy Latvian goods and hence repay foreign savings. While this parameter is unobservable, it is reasonable to expect that this elasticity may have declined (particularly relative to other EU8), reflecting concerns that Latvia's products are generally of a lower quality and technology content than those of other EU8 countries.[2]

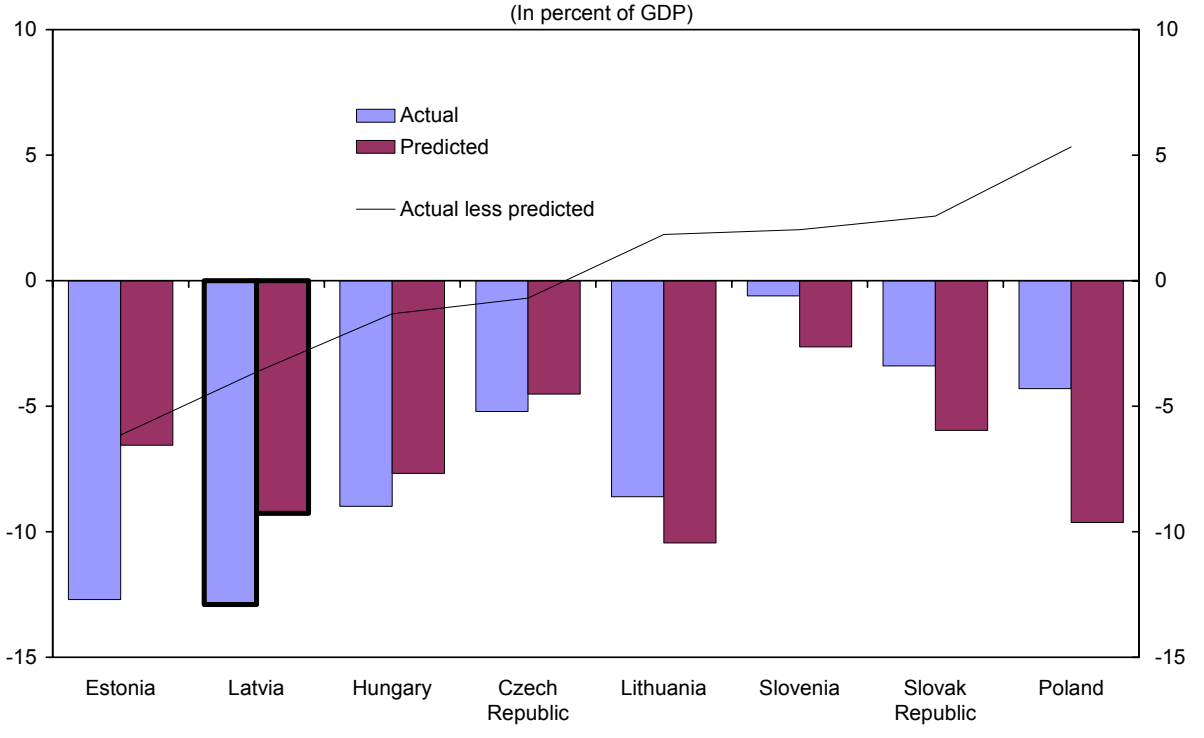
8. **An important implication of this model is that a reassessment of future growth prospects will induce a change in the level of the sustainable current account deficit.** Hermann and Jochem (2005) suggest that even though a given level of the current account deficit may be sustainable under expectations of strong GDP growth, less-optimistic expectations could call into question the sustainability of the external imbalance. Moreover, these growth expectations could be influenced by the convergence process itself since, as noted by Abiad and others (2006), rapid growth with large-scale use of foreign savings

[2] See "The Dynamics of Product Quality and International Competitiveness," in the accompanying multi-country selected issues paper, and the discussion on export performance later in this chapter.

produces conditions commonly associated with heightened vulnerabilities to financial shocks.

9. Augmenting this model with a richer supply side allows one to generate joint predictions for the current account balance and GDP growth. Abiad and others (2006) supplement the Blanchard Giavazzi model to include the idea that using borrowed foreign funds to invest in productive capacity will increase economic growth. Estimating such a two-system model, they find that the current account deficit is a positive function of past GDP growth (and other variables), while GDP growth is positively related to the current account deficit.[3] Therefore, faster GDP growth is consistent with a larger current account deficit.

Figure 5. Actual and Predicted Current Accounts, 2004
(In percent of GDP)



Sources: Abiad, Leigh, Mody, and Schadler (2006); WEO; and Fund staff calculations.

10. **The model predicts that Latvia's recent growth performance is consistent with a current account deficit on the order of 9 percent of GDP in 2000–05, the second highest in the EU8** (Figure 5). The predictions are fairly close to actual values in individual years, suggesting that developments in Latvia's current account were broadly consistent with its rapid GDP growth and structural features. However, the model leaves an unexplained

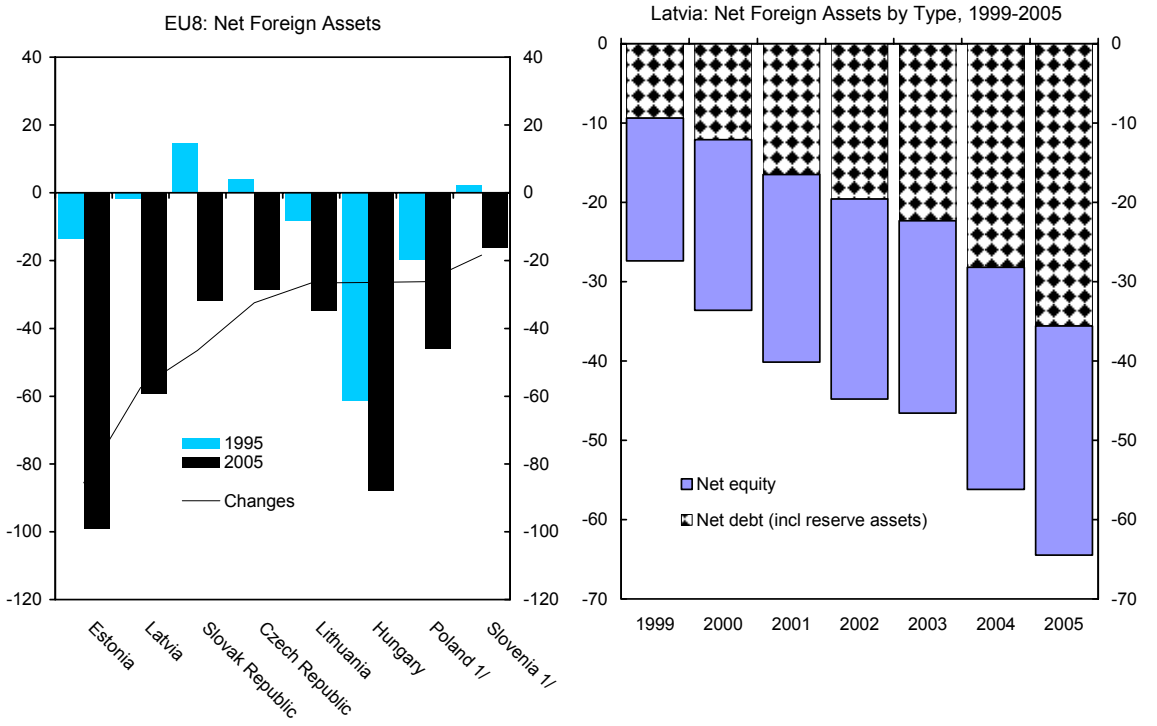
[3] They also include demographic and schooling variables, and allow the relationship between growth and the current account deficit to vary over time. On the other hand, their model does not include explicit measures of borrowing costs.

residual of more than 3 percentage points of GDP for 2005, thereby underpredicting the scale of the recent widening. This suggests that factors beyond the scope of the estimated model have contributed. Possible candidates include declining borrowing costs,[4] adverse terms of trade developments, and one-off and cyclical factors.

C. Latvia's External Liabilities and Balance-Sheet Mismatches

11. **The foregoing analysis focused on the appropriate level of Latvia's current account deficit, ignoring the impact the sequence of deficits has had on the stock of foreign liabilities, how these foreign savings are used, and whether they brought an increase in balance-sheet mismatches.** We now turn to these issues. First we derive some stylized facts regarding Latvia's foreign liabilities in order to assess the likely structural benefits from the capital inflows. And second, we examine balance-sheet mismatches across the sectors of the economy. Together, this provides a range of qualitative evidence as to whether Latvia's external imbalances are likely to support sustained income convergence and generate automatically the resources needed to service its external liabilities.

Figure 6. Latvia and EU8: Net Foreign Assets
(In percent of GDP)

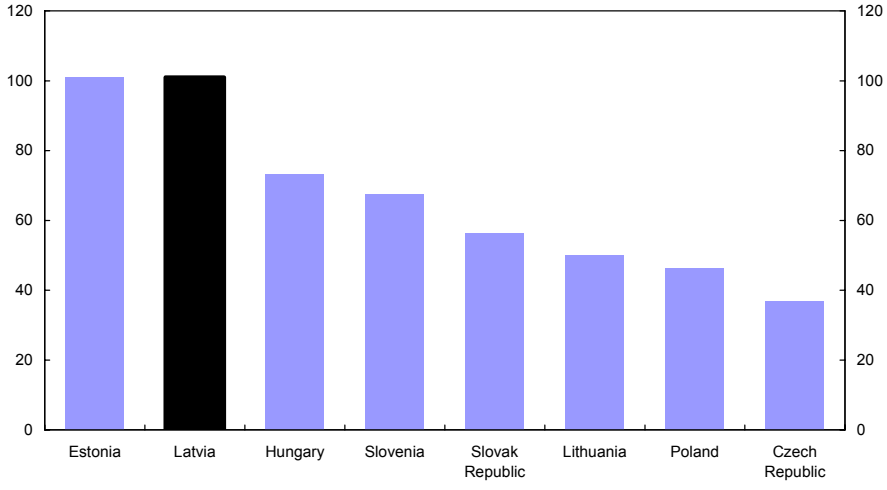


Sources: *International Financial Statistics;* country authorities; and Fund staff calculations.
1/ 2004.

[4] One might therefore have expected a similar underprediction across all EU8, which is not the case.

12. **Latvia's net foreign liabilities have increased markedly since 1995.** At 59 percent of GDP in 2005, Latvia's NFL ratio is exceeded only by Estonia's and Hungary's. However, unlike other EU8—where net equity (FDI and portfolio) accounts for the largest share of NFLs—in Latvia, more than half is in the form of net debt, which increased from 9 percent of GDP in 1999 to 36 percent of GDP in 2005 (Figure 6). Latvia's equity liabilities increased only 10 percentage points during this period. Latvia's gross assets and liabilities rose much faster than net liabilities. Gross external debt liabilities reached 101 percent of GDP in 2005 (about equal with Estonia), up from 32 percent of GDP in 1995 (Figure 7), while gross external debt assets stood at 65 percent of GDP in 2005, up from 43 percent in 1999.

Figure 7: Gross External Debt, 2005
(In percent of GDP)



Sources: International Financial Statistics; country authorities; and Fund staff calculations.

13. **With the majority of Latvia's foreign debt owed by banks, their decisions will determine whether credit allocation is used to enhance growth prospects or add to vulnerabilities.** Banks account for half of Latvia's foreign debt assets and two-thirds of its foreign debt liabilities. Almost 50 percent of banks' foreign liabilities (32 percent of GDP) reflect nonresident deposits (NRDs) held in mostly locally-owned, smaller Latvian banks that rely on them as a major funding source. Foreign-currency liquidity coverage of NRDs is about 60 percent. Other, mainly foreign-owned, banks that focus primarily on lending to residents, fund their activities through domestic deposit-taking and, increasingly, borrowing abroad (including from their parents) (Box 1).

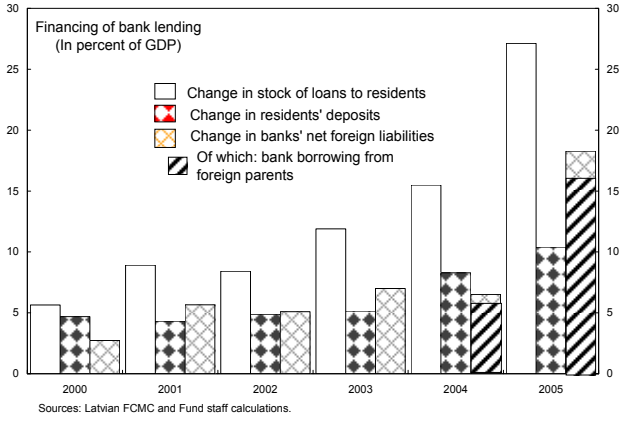
14. **With bank lending concentrated towards households, it is unlikely to have expanded significantly Latvia's long-term production capacity.** During 2003–05, when the stock of credit to residents increased by 40 percentage points of GDP, over 60 percent of new loans were used to finance residential mortgages or corporate real estate, leasing, and related activities. Other lending to households accounted for an additional 12 percentage points. Only 5 percent of the new loans went to the manufacturing sector (Figure 8).

Therefore, while the lending has undoubtedly raised the well-being of households, there have been few benefits for sectors that could generate additional export earnings.

Box1. Domestic Counterparts to External Financing

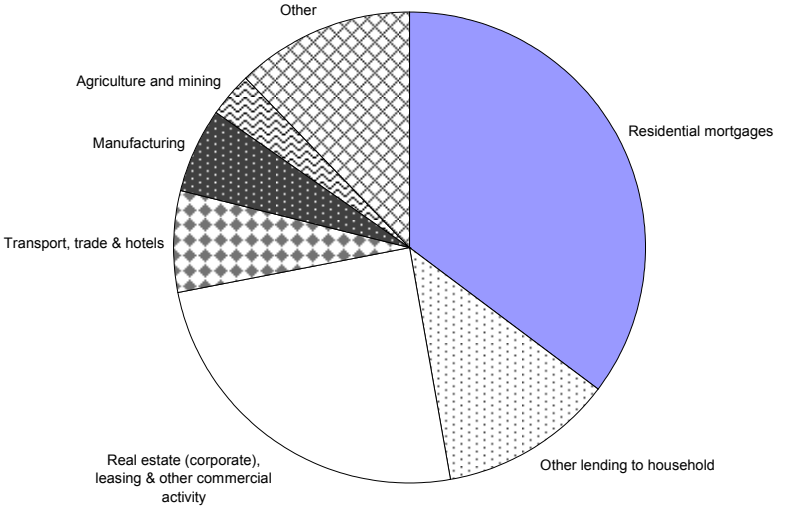
The sharp increase in external financing since 2000 has been accompanied by a marked shift in its composition. In 2000, when Latvia's financing requirement (defined as the sum of the current and capital account deficits, errors and omissions, and changes in reserves) was 5¼ percent of GDP, FDI was the primary source of funding. Since 2004, however, external bank borrowing—including from foreign parent banks—has become the dominant source of foreign financing, reaching 18½ percent of GDP in 2005.

The counterpart to this increase in bank foreign borrowing has been the rapid expansion in bank lending to residents that is not covered by accumulation of residents' deposits. With deposits increasing at a much slower pace than credits, rising net foreign liabilities of banks (including borrowing from parents) have made up the shortfall. In 2005, when loans to residents grew by 27 percentage points of GDP, two-thirds of domestic credit expansion was funded through an increase in net foreign indebtedness of banks.



Sources: Latvian FCMC and Fund staff calculations.

Figure 8: Lending by Sector, 2003-05
(In percent of change in the stock of bank loans)



Sources: Latvian Financial and Capital Markets Commission; and Fund staff calculations.

15. **The size and sectoral distribution of FDI point to a similar pattern.** In 2005, Latvia had the second lowest stock of inward FDI relative to GDP among the EU8 (Table 1). Only 14 percent of its FDI stock (4½ percent of GDP) was directed to the manufacturing sector, the smallest GDP share among the EU8. Therefore, Latvia has missed out on the potential productivity-enhancing benefits that FDI in export-oriented manufacturing sectors can bring.[5] Indeed, the distribution of Latvia's inward FDI stock exhibits a similar structure to that of domestic lending, with a heavy concentration towards real estate and other business services, and financial services.[6]

Table 1: Stock of FDI by Sector, 2005

	Estonia	Latvia	Lithuania	NMS8 1/
		(In percent of GDP)		
Total FDI	98	31	26	41
		(In percent of total FDI)		
Manufacturing	14	14	33	31
Services	77	79	64	59
Financial intermediation	47	17	15	18
Real estate & other bus. services	16	22	9	12
Other	9	7	3	10
Total	100	100	100	100

Sources: Eurostat; country authorities; and Fund staff calculations.
1/ 2004 data for total FDI, 2003 data for shares of total FDI

16. **Financial deepening and growing external liabilities can potentially create vulnerabilities to changes in financial market prices through their effects on balance sheets**. We examine trends since 1999 in the stocks of assets and liabilities in four domestic sectors—the public sector (government and the Bank of Latvia), banks, enterprises, and households—and consider three forms of mismatch:[7]

[5] See for example Barba-Navaretti and Venables (2004).

[6] This discussion has not considered the allocation of EU funds—some of which are destined for the corporate sector—or direct borrowing by corporates from foreign banks. However, these amounts are significantly smaller than debt and FDI.

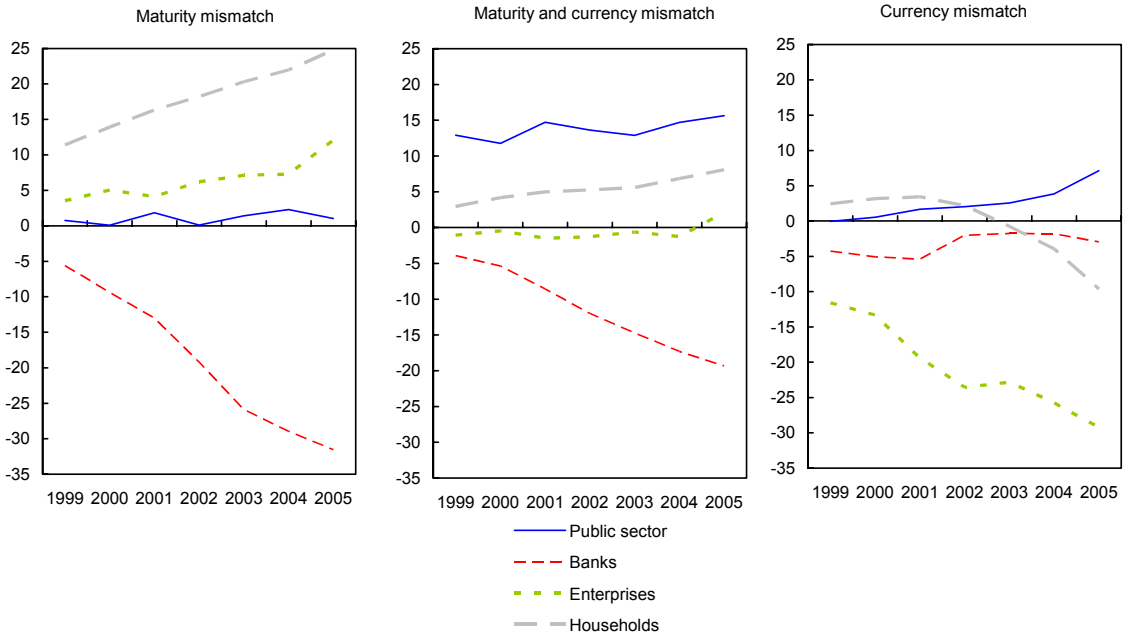
[7] See Allen, Rosenberg, Keller, Setser, and Roubini (2002), and Rosenberg, Halilias, House, Keller, Nystedt, Pitt, and Setser (2005). Lima, Montes, Varela, and Wiegand (2005) undertook extensive work on Colombia, while Luna (2005) examined balance-sheet mismatches for Latvia for 2004.

(i) *Maturity mismatch* measures the difference between short-term debt assets and short-term debt liabilities in both domestic and foreign currencies to capture susceptibility to *rollover* and *interest rate* risks;

(ii) *Maturity and currency mismatch* is defined as short-term debt assets minus short term debt liabilities in foreign currency only. This measures exposure to *rollover* and *currency risk*.

(iii) *Currency mismatch* is defined as debt assets minus debt liabilities (in both short and long maturities) denominated in foreign currency. This indicates sensitivity to exchange rate movements, whereby sectors with a negative currency mismatch would incur a capital loss in the event of a depreciation.

Figure 9: Latvia: Balance Sheet Mismatches
(In percent of GDP)



Sources: Bank of Latvia and Fund staff calculations.

17. **The main conclusions from the balance sheet analysis are** (Figure 9):

- ***Enterprises***' already-large net currency liability positions have increased further in recent years to near 30 percent of GDP. A significant part of this reflects borrowing by large utility companies (both state-owned and private) and the shipping company. While the latter has a natural hedge through its export earnings, it is not known whether the utilities have hedged their currency risk. The share of foreign currency lending to corporates by domestic banks has risen in recent years from 50 percent in 2003 to 70 percent in 2005. With most corporate lending allocated to the nontradables sector, these firms are unlikely to be insulated against currency risk. The enterprise

sector's positive maturity mismatch has also grown, reflecting the fact that most of their borrowing is long-term, whereas their assets tend to be short term.

- From a close-to-balance position in 2003, ***households***' currency mismatch has widened rapidly, reaching 9½ percent of GDP in 2005 and likely growing significantly larger in 2006. This reflects the fact that foreign-currency deposits have not kept pace with foreign-currency borrowing. Moreover, with loans concentrated among a still-small fraction of households while deposits are more widely held, currency mismatches will be unevenly distributed across households. The proportion of households with foreign currency earnings is unknown, but is thought to be small.

- ***Banks***' direct exposure to exchange rate movements amounted to only 3 percent of GDP in 2005, but was equivalent to 15 percent of total banking sector capital. However, indirect exposures—reflecting the shifting of currency risk to unhedged enterprises and households—is likely to be significantly larger. The large and growing negative maturity and maturity-and-currency mismatches reflect banks' role as financial intermediaries.

- The ***public sector***'s positive and growing currency mismatch—which reflects the rapidly rising volume of international reserves at the Bank of Latvia (16 percent of GDP at end-2005)—implies that it is well insulated against rollover risk, but exposed to a decline in interest rates. With government foreign-currency debt primarily of medium-to-long maturities, large BoL reserves imply that the positive currency mismatch is significantly larger at short maturities.

D. Stabilizing Net Liabilities

18. **A corollary to the accumulation of foreign liabilities during periods of rapid GDP growth is the gradual paying down of these liabilities as income convergence proceeds.** Achieving this adjustment will require a turnaround in the trade balance from a sustained deficit to a sustained surplus. To explore how this process might proceed in the Baltics, Bems and Jönsson Hartelius (2006) calibrate a two-sector (tradables and nontradables) neoclassical growth model to each of the Baltic countries. They predict that Latvia's goods and services balance will shift from a deficit of 15 percent of GDP in 2005 to become positive by 2013. This will be accompanied by a real depreciation that helps shift production from the nontraded to the traded sector. An adjustment in the goods and service balance of this scale would deliver a current account surplus, and eventually transform Latvia into a net creditor. In this section, we focus on the less-demanding goal of stabilizing net

foreign liabilities, which provides a lower bound on the amount of external adjustment that could be required.[8]

19. **Following Lane and Milesi-Ferretti (2006), the magnitude of goods and services adjustment will depend on the target level for net external liabilities, the prevailing stock, and real returns on foreign assets and liabilities relative to GDP growth**. Assuming the economy is at a steady state, the external flow balance (that is, the sum of the balances on the goods, services, current transfers, labor income, and capital accounts—$gstl\&k$ balance, or alternatively, the sum of the current and capital accounts less net investment income) that would stabilize net foreign liabilities depends on the difference between GDP growth-adjusted returns on foreign assets, a^{ss}, and foreign liabilities, l^{ss}:

$$gstl\&k^{SS} = \frac{(g^{ss} - r^{a})}{(1+g^{ss})(1+\pi^{ss})} a^{ss} - \frac{(g^{ss} - r^{l})}{(1+g^{ss})(1+\pi^{ss})} l^{ss} \qquad (2)$$

where g^{ss} and π^{ss} are the rates of GDP growth and inflation, and r^{a} and r^{l} are the Latvia-specific real returns on foreign assets and liabilities. This relationship implies that net external liabilities can be stabilized while running an external flow deficit provided the steady state rate of GDP growth is sufficiently rapid relative to real payments on liabilities. We assume that Latvia fulfills this condition.[9]

20. **In order to stabilize net foreign liabilities at 51.4 percent of GDP, the average for non-industrial countries, the external flow deficit would need to decline from 7.8 percent of GDP in 2005 to 1.2 percent** (Table 2). Rising EU grants and repatriation of labor income by Latvians working abroad will increase current and capital transfers and contribute to this improvement. However, relative to the 2005 outturn, there would still need to be a 4 percentage point improvement in the goods and services balance. If Latvia's rate of GDP growth were to slow significantly, borrowing costs increase, or a smaller steady-state level of liabilities be deemed appropriate, this would call for a larger improvement in external flows.

[8] From a situation of expanding liabilities, stabilization can be thought of as an intermediate step in the longer-term process of repaying foreign liabilities.

[9] In the base case for Latvia, we assume steady state growth of 6.8 percent, and a real return on liabilities of 3 percent. Appendix I presents the full set of assumptions and a sensitivity analysis.

Table 2: NFL-Stabilizing Trade Balance

		2003	2004	2005	2006 Q1	Stabilizing levels
		(In percent of GDP) 1/				
a	Goods and services	-12.7	-15.9	-15.0	-17.1	-11.1
b	Current transfers	4.7	5.0	3.7	5.4	4.9
c	Wage income	1.5	1.6	2.3	2.6	3.0
d	Capital account	0.7	1.0	1.2	1.7	2.0
a+b+c+d	gstl&k	-5.8	-8.3	-7.8	-7.3	-1.2
	NFL	-43.2	-51.6	-58.9	-61.7	-51.4

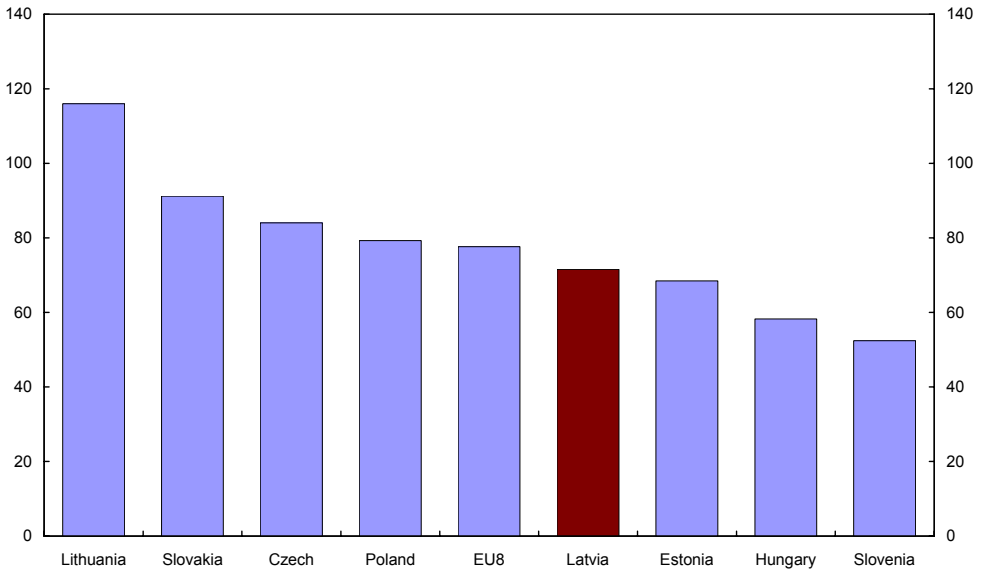
Sources: Country authorities; and Fund staff calculations.
1/ Actual data for 2003-2006Q1.

E. Export Performance

21. Expanding export earnings could be an important channel for achieving the required adjustment in external flows. This chapter has argued that large current account deficits have led to the accumulation of sizable external liabilities that will need to be serviced and (in the case of debt) eventually repaid. Stabilizing net liabilities will require a 4 percentage points of GDP improvement in the goods and services balance, although this should probably be viewed as a lower bound on the likely required adjustment. How easily this can be realized will depend on: (i) whether foreign savings have been channeled to the tradables sector (which is not the case); (ii) how readily factors of production are able to shift away from nontradables and into the tradable sector; and assuming the previous two conditions are met, (iii) whether Latvia's mix of export products can achieve a significant increase in market share to generate greater export earnings.

22. While export performance has been relatively strong in recent years, part of this reflects temporary factors. Exports of goods and services increased in nominal euro terms by 72 percent during 2000–05, slightly faster than in neighboring Estonia, although more slowly than the EU8 average (Figure 10). This was mainly due to an acceleration in exports during 2004–05 reflecting primarily the impetus to agricultural exports to the EU from full harmonization of the trade regime and food, health and safety standards. This suggests that the recent growth in export volumes and prices is unlikely to be repeated going forward. Recent rapid increases in unit labor costs may also encumber future export growth.

Figure 10. Selected Countries: Growth in Exports of Goods and Services, 2000-05
(Nominal euros: in percent)



Sources: WEO; and Fund staff calculations.

23. Analyzing the product composition of Latvia's exports can also shed light on the ease with which Latvia can expand its export markets. This is done by examining the quality and technology content of Latvia's exports, and by analyzing demand growth in the markets in which Latvia competes and the characteristics of its major competitors.

24. To assess the quality and technology content of Latvian exports, we apply three alternative classifications:[10]

(i) *Technology and resource content*, whereby exports are divided into (a) low-tech and labor-intensive products, (b) resource-intensive products, and (c) medium- to high-tech products (Appendix II, Figure 1).

(ii) *Comparative advantage*, in which exports are classified into (a) mainstream manufacturing products, (b) labor-intensive products, and (c) capital-intensive and tech-driven products (Appendix II, Figure 2).

(iii) *Skill requirement* in which exports are allocated into (a) low-skill products, (b) medium-skill blue-collar products, and (c) medium-skill white-collar and high-skill products (Appendix II, Figure 3).

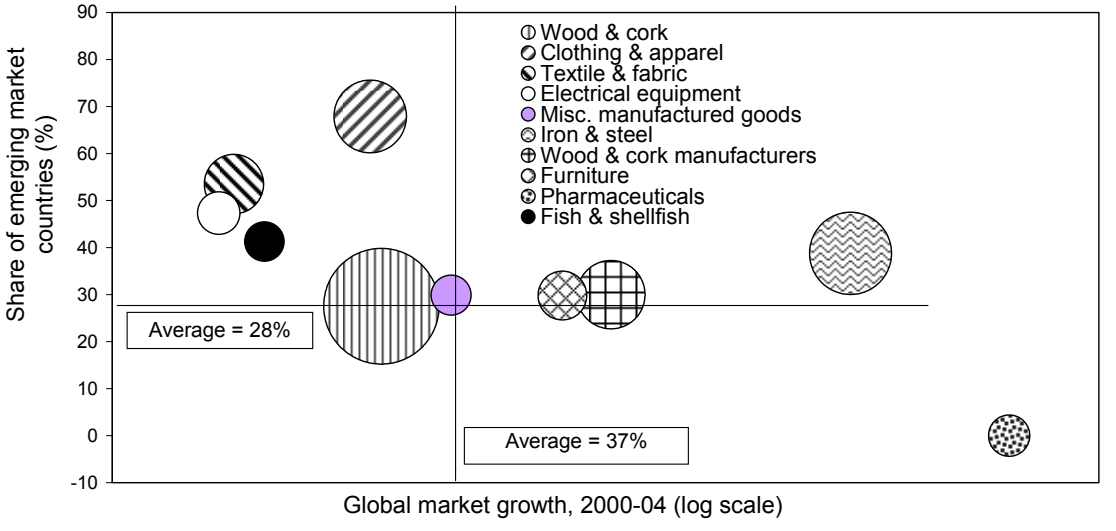
25. **Data indicate that Latvia's exports remain concentrated in resource- and labor-intensive goods that are produced with low- and medium-skill blue-collar labor**.

[10] This discussion is based on Luna (2005b), who adopts the taxonomies of Landesmann and Stehrer (2003) and Peneder (1999, 2001).

Moreover, this structure has changed very little since 2000. In contrast, all other EU8 countries have steadily increased the technology content of their exports, particularly the Czech Republic and Hungary—which have also been the largest recipients of manufacturing FDI. This finding does not bode well for Latvia's export prospects. This is confirmed by Fabrizio, Igan, and Mody (2006), who find that improved export quality and technology upgrading among the EU8 during 1994-2004 contributed significantly to the increase in their international market shares.

26. **The second approach to analyzing the structure of Latvia's exports examines the speed of growth of individual export markets and the intensity of price competition that Latvia could face**. Figure 11 depicts ten industrial branches that accounted for more than 70 percent of Latvia's export sales in 2004. The size of each circle represents the branch's share of Latvian exports. The vertical position of a circle measures the share of emerging market countries in global trade for that industry. A horizontal axis is drawn at 28 percent, which reflects the average presence of emerging markets in world trade. With the exception of pharmaceuticals, all of Latvia's major export sectors currently face an above-average degree of emerging market competition, with some (e.g., textiles) facing very high levels of competition from low cost countries. The horizontal axis captures the strength of global market growth. Each sector is positioned horizontally according to how rapidly the worldwide market for that industry grew in nominal U.S. dollar terms—relative to the 37 percent increase in world trade—during 2000–04.

Figure 11: Latvian Exports: Emerging Market Competition by Sector



Sources: UN Comtrade database; Latvian authorities; and Fund staff calculations.

27. **This analysis finds that Latvia's exports are concentrated in industries in which world demand is growing relatively slowly, and where there is a heavy presence of low-wage countries.** In Figure 11, the most desirable location for an industry is the south-east

quadrant, with the least desirable being the north-west quadrant. The intuition of this analysis is that Latvian exporters could do well even if they were losing market share to low-cost producers provided the global market for that product is expanding rapidly. However, only two of Latvia's major export industries—iron and steel, and pharmaceuticals—are growing rapidly worldwide, and they accounted for just 12½ percent of Latvia's exports in 2004. Moreover, nearly 30 percent of Latvia's exports are in goods where competition from emerging markets is above average or intense (clothing and apparel, textiles and fabrics, and electrical equipment).[11] Latvia's largest export category—wood and cork—would not seem to offer significant growth potential since market growth has been marginally below average, while emerging market countries are participating in the sector at close to the average for all industries.

F. Conclusions

28. The external imbalances that accompanied Latvia's integration into the global economy have generated mixed effects. Latvia's sizable and widening current account deficit is broadly consistent with its rapid GDP growth and deepening economic integration. Most gains have accrued to households, who have benefited from substantial investments in housing and rapid growth in consumption. However, reliance on foreign savings has led to vulnerabilities, including growing external indebtedness and rising balance-sheet mismatches. Enterprise and household exposures to foreign currency shifts have increased sharply, while banks have also built up indirect mismatches, primarily through their foreign-currency loans to unhedged borrowers.

29. **Halting the increase in external liabilities will call for a sizable improvement in the goods and services balance that the export sector may be unprepared to deliver.** Stabilizing net foreign liabilities will require an improvement in the goods and services balance of at least 4 percentage points of GDP. The task could be even greater in view of the recent further widening of the trade deficit. With bank lending and FDI allocated primarily to nontradable sectors, realizing the improvement in the trade balance will require shifting resources across sectors. But the relatively static product structure of exports over the past decade—even as other EU8 countries raised the technology and skill content of their exports—suggests that realizing a significant redeployment of the factors of production may require a sizable real depreciation. Moreover, to grow export market shares and head-off competition from low-cost countries will require significant changes in the product composition of exports. If this does not materialize, demand compression will need to make a major contribution to external adjustment.

[11] While this data entails a relatively high degree of aggregation, thereby masking examples of Latvian companies which responded to global competition by seeking out profitable market niches, their significance is likely to be very small.

Appendix I. Stabilizing External Liabilities: Sensitivity Analysis

The calculation of the external flow balance that stabilizes net foreign liabilities relies on a number of assumptions, shown in the table below. The steady-state rate of real GDP growth is assumed to be 6¾ percent. Long-run inflation is assumed be 3 percent, equal to the ECB target (of close to—but below—2 percent) plus a 1 percentage point premium. In line with Lane and Milesi-Ferretti (2006), real returns on equity assets are assumed to be 100 basis points above real GDP growth rates in the global economy (relevant for Latvia's assets), and in Latvia (relevant for Latvia's liabilities). This assumption on returns on Latvia's foreign assets is quite conservative since data indicate that Latvian investors have generated higher returns on outward equity flows, possibly reflecting the fact that they tend to invest in fast-growing economies. The assumption on returns on debt is that Latvia pays 50 basis points more on its debt liabilities (2.0 percent in real terms) than it receives on its assets (1.5 percent). This relatively low spread reflects the narrow sovereign spread (which ranged between 10 and 20 basis points over the past 12 months), and the relatively large share in total foreign assets of liquid assets held by BoL and Latvian banks, which are low yielding.

Table 1: Assumptions Underlying Net Liability Stabilization
(In percent)

	Assumption	Comments
Assets		
Equity	5.3	Set at 100 basis points over global growth, assumed to be 4.3 percent
Debt (including reserves)	1.5	
Weighted return on assets	1.8	
Liabilities		
Equity	7.8	Set at 100 basis point over Latvian growth
Debt	2.0	
Weighted return on liabilities	3.0	
Growth and inflation		
Real GDP growth	6.8	
Inflation	3.0	Derived from an OLS regression of inflation on growth, constrained so that inflation cannot fall below 2 percent.

Source: Fund staff calculations.

The conclusion that a 6.6 percent adjustment in the external flow balance is required to stabilize net liabilities is sensitive to our assumptions about real returns on assets and liabilities and, to a lesser extent, GDP growth. Table 2 presents a sensitivity analysis that considers two alternative scenarios for real returns on assets. Full convergence implies equal real returns on debt assets and liabilities, which would shrink the difference in the weighted returns from 1.2 percentage points to 0.8 percentage. This would also reduce the amount of adjustment required by 0.3–0.4 percentage points of GDP depending on the growth assumption. Reverse convergence assumes that the sovereign spread widens back to the level four years ago, implying that real returns on debt liabilities increase to 3.5 percent. However, the only scenario in which Latvia would need to run a surplus on its external flow balance is when reverse convergence is combined with weak growth. This result reflects the fact that: (i) Latvia has substantial foreign assets *and* liabilities; and (ii) our baseline assumption

implies that growth substantially exceeds the real return on liabilities so that large changes are required to reverse the sign of this expression.

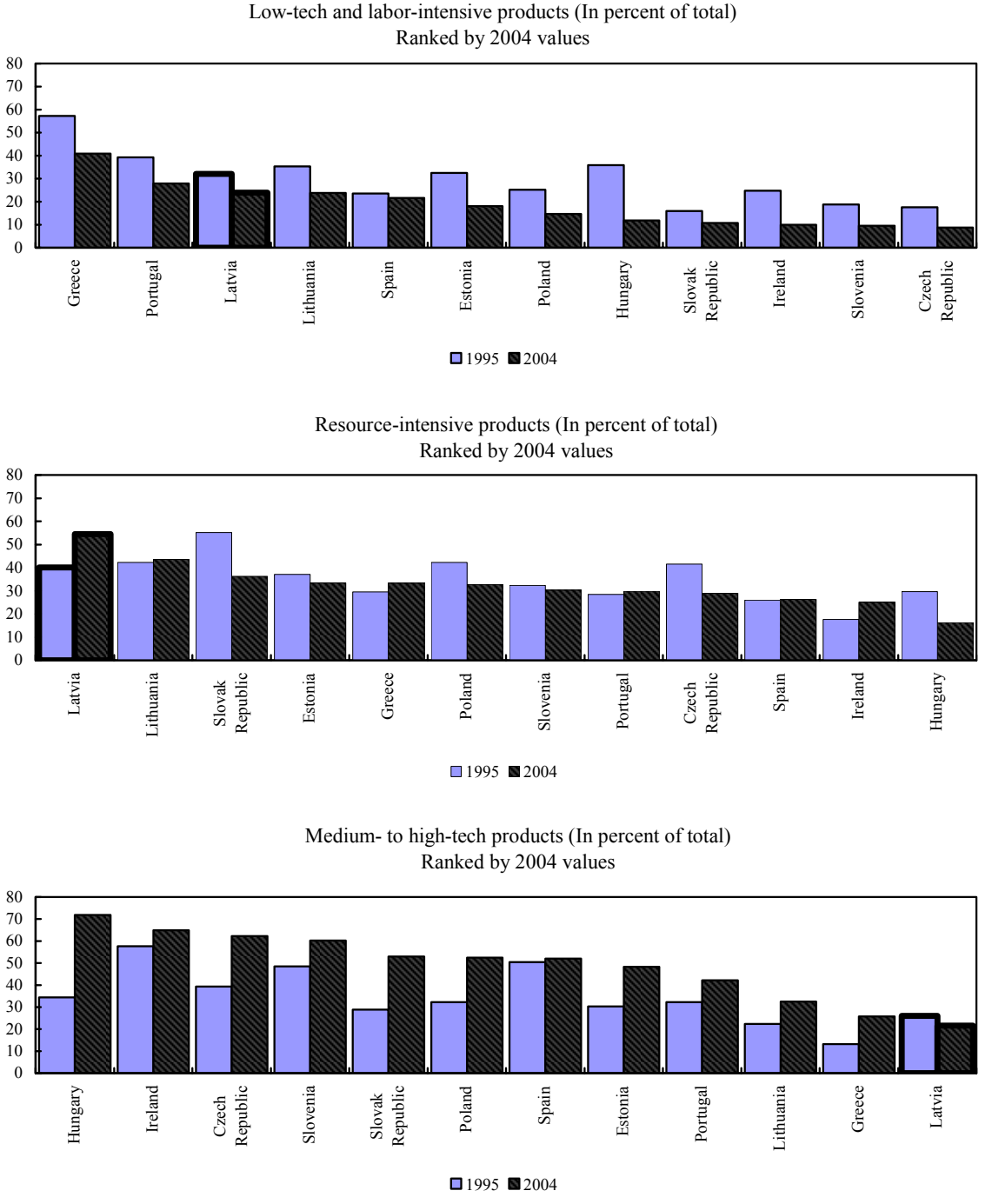
Table 2: Sensitivity Analysis
(In percent of GDP)

		Spread (in basis points)		
		Full convergence	Baseline	Reverse Convergence
Growth	4.8	-1.0	-0.6	0.5
	6.8	-1.6	-1.2	-0.1
	8.8	-2.1	-1.8	-0.7

Source: Fund staff calculations

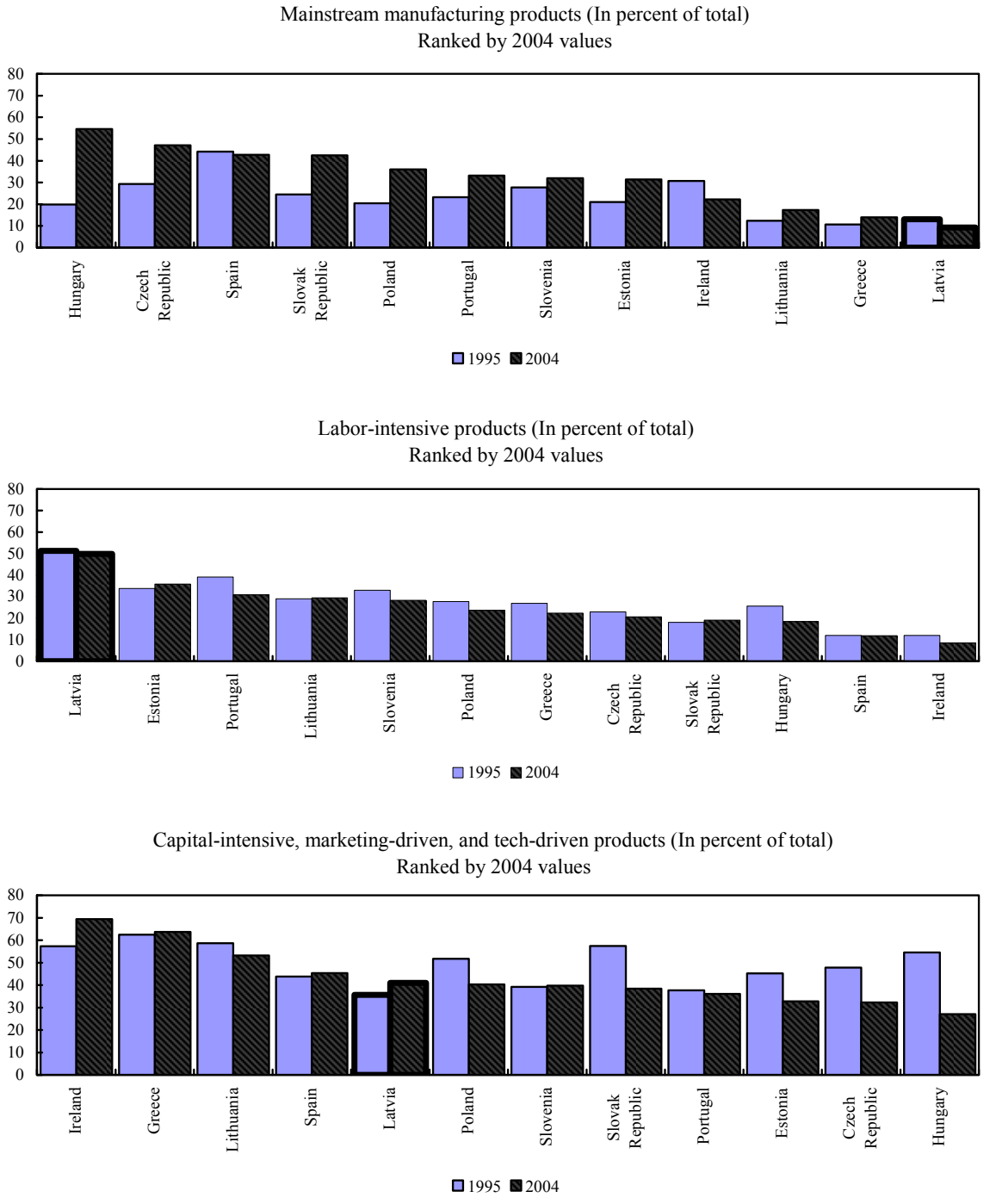
Appendix II: Structure of Exports in Selected European Countries

Figure 1. Structure of Exports, Taxonomy 1



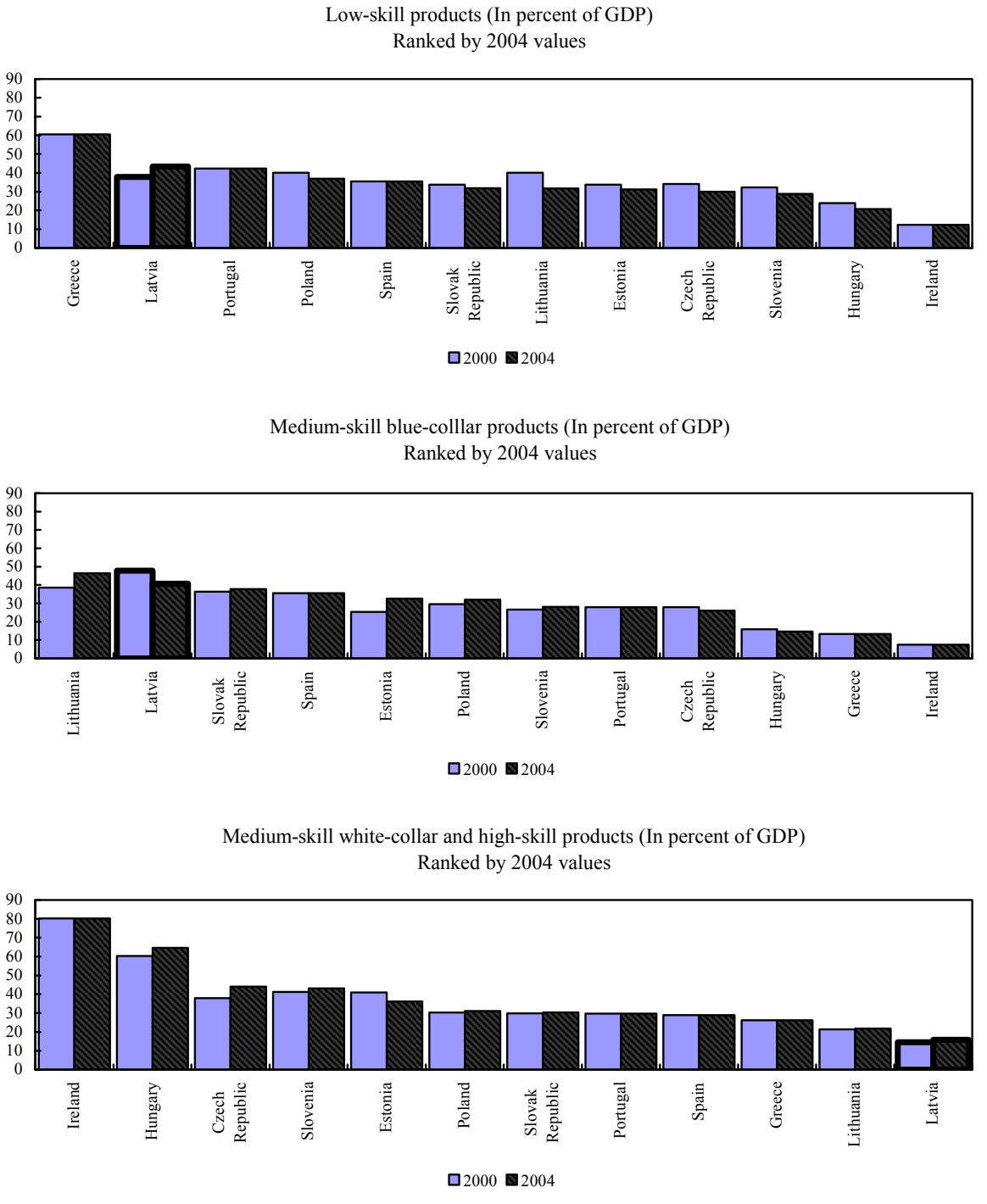
Source: Luna (2005b).

Figure 2. Structure of Exports, Taxonomy 2



Source: Luna (2005b).

Figure 3. Structure of Exports, Taxonomy 3



Source: Luna (2005b).

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II. Labor Outflows, Capital Inflows and Income Convergence in Latvia[12]

A. Introduction and Overview

1. **Latvia, along with many other emerging market economies, is concerned with the economic and social consequences emigration**. This paper addresses the causes and implications of labor emigration in the context of a converging economy with a much lower capital-to-labor ratio than its EU partners.

- Section B examines the extent of Latvian emigration and compares Latvia's experience to two historical episodes of migration—the so-called age of mass migration during 1870-1910 and the migration that accompanied the reunification of Germany starting in 1989.

- Section C briefly summarizes macroeconomic growth and economic geography theories which view migration as a natural part of economic convergence. They suggest a number of possible outcomes, ranging from orderly convergence to permanent divergence. Unfortunately, economic theory is not yet mature enough to put forward specific policy advice, but it does offer an analytical approach for evaluating developments in Latvia, as well as other emerging economies.

- Using this analytical approach section D takes a look at recent trends in economic convergence (labor and capital flows) in Latvia and compares this experience to several current and historical episodes of convergence. The performance is mixed: While Latvia appears to be heading in the right direction, these trends must be interpreted very cautiously, especially since available data ends just as Latvia joined the EU in 2004. With open borders with the UK, Ireland, and Sweden and possibly open borders with other EU members in the near future, both capital and labor flows might look very different in a few years' time.

- Section E reviews the economic and social consequences of outward migration. While the impact of emigration is poorly understood and there are no easy answers for mitigating its economic impact, there are several factors that should be considered in formulating a long-term immigration policy.

- Finally, section F offers some short- and longer-term policy options for coping with labor outflows.

[12] Prepared by Allan Brunner.

B. How Large is the Migration Problem?

2. **Official statistics reveal that the population of Latvia has declined markedly in recent years, owing both to net outward migration and to a falling birthrate** (Table 1). According to these data, Latvia has almost 400,000 fewer residents in 2005 compared to the population in 1990. As shown in the last two columns of the table, the population decrease is about equally explained by net outward migration and by a natural decrease in the population (as a fall in the fertility rate led to deaths outnumbering births). The official statistics also indicate that more than one-half of the residents that left Latvia between 1990 and 2005 emigrated to CIS countries. The fall in the population due to natural causes—which is not discussed in this paper—is also quite worrisome, as it continues unabated and will begin to exacerbate a shrinking labor market in a few years' time.

Table 1. Latvia: Population Changes, 1990-2005

Year	Population (in thousands)	Δ in Population (in thousands)	Δ in Population (per 1,000)	Net Migration (per 1,000)	Natural Increase (per 1,000)
1990	2,689				
1995	2,501	-189	-73.4	-53.1	-20.3
2000	2,377	-123	-43.6	-14.3	-29.3
2005	2,306	-71	-29.8	-4.0	-25.8
1990-2005		-383	-147	-71	-75

Source: Central Statistical Bureau of Latvia and staff calculations

3. **The official statistics measure only *long-term* migration (CSB, 2006)**. According to the practices of Latvia's Citizenship and Migration Board, long-term migration refers to individuals who leave Latvia with the intent of settling in a new country for at least one year and who report this intention to an appropriate authority. Therefore, the data in Table 1 do not capture several categories of migration:

- illegal migrants who move permanently to another country without proper authorization from the receiving country,
- permanent migrants to another EU country who do not report their change of residency, and
- temporary migrants to another EU country who are not required to report their arrival in the receiving country.

The latter two categories are especially important in Latvia's case: Since EU accession, many Latvians have been moving to Ireland and the U.K.—either permanently or temporarily—to seek and obtain work.

4. **Indeed, anecdotal evidence suggests that unreported outward migration is significant and has picked up substantially since EU accession**. The Latvian authorities estimate that at least 50,000 additional Latvians have moved abroad—about twice the official number and about 2 percent of the 2005 population—since Latvia joined the EU in 2004. Other (unofficial) estimates suggest that this number may be as large at 100,000 individuals. Moreover, the number of emigrants could increase in the near future, as more EU countries open their borders to EU-member workers.[13]

5. **Several recent surveys suggest that *potential* outward migration is substantial**. For example, a survey conducted by SKDS (2006) in January 2006 revealed that about 22 percent of Latvian residents are "very likely" or "somewhat likely" to go to another country for work "in the next two years". Based on the current estimated population, this translates into between 350 and 450 thousand residents (between 15 and 20 percent of the 2005 population). The survey also indicated that these respondents were significantly skewed toward the relatively young (15-35), which would significantly reduce the working-age population and labor force in the near future. These respondents were also slightly more likely to be male, less educated, low-income, employed in the private sector, or non-Latvian.[14]

6. **How does Latvia's emigration experience compare with other historical periods of migration**? To summarize the preceding analysis, it is reasonable to assume that between 5 and 10 percent of Latvia's residents are currently living (and possibly working) abroad. Moreover, surveys suggest that an additional 15 to 20 percent of current residents are thinking of leaving in the next few years. How do these numbers compare with experiences of other countries?

7. **There was a massive flow of migrants from the Old World to the New World between 1870 and 1910**. This era represents one of the most open periods in terms of labor mobility. It also represents an era with great economic disparities: In 1870, real wages in Ireland, for example, were about 40 percent of real wages in the New World, and disparities were even larger in Denmark, Italy, Norway, and Sweden (see Taylor and Williamson (1994)). Laborers and their families responded *en masse* to these incentives (Table 2).[15] The largest outflows were from Ireland, where over 40 percent of the labor force and about a third of the population left between 1870 and 1910. There were smaller but sizeable outflows from

[13] By 2011, all EU countries are required to accommodate intra-EU labor migration.

[14] Other surveys show similar results—see Brunovskis, Djuve, and Haualand (2003) and Hazans (2006).

[15] The effects of this mass migration on economic convergence between the Old World and the New World will be discussed in section D.

Italy and the Nordic countries, and these outflows were of similar magnitude to the outflows (actual plus potential) for Latvia that were discussed previously.

Table 2. Demographic Impacts During the Age of Mass Migration, 1870-1910

	Average Annual Net Migration Rate [1]		Cumulative Percent Change	
Country	Population	Labor Force	Population	Labor Force
Denmark	-2.4	-3.2	-9	-12
Ireland	-10.1	-13.3	-33	-41
Italy	-6.8	-8.5	-23	-29
Norway	-4.8	-6.2	-17	-22
Sweden	-3.8	-5.0	-14	-18

Source: Taylor and Williamson (1994)
[1] Per 1,000

8. **Migration from East to West Germany after the fall of the Berlin Wall in 1989 also provides an interesting comparison** (Table 3). In order to speed up convergence between the two regions, West Germany supplied massive amounts of capital to update East Germany's infrastructure, and labor market policies entailed equalization of nominal wages that led to a significant jump in real wages for East Germans. Nevertheless, despite these efforts, East Germany's population dropped almost 9 percent between 1989 and 1999. Similar to Latvia, about half of this decline can be attributed to net outward migration—amounting to 4.7 percentage points—with a falling birth rate accounting for the rest. In addition, gross migration was also quite sizeable, with more than 7 percent of East Germany's population moving to West Germany.[16]

Table 3. Demographic Impacts in East Germany, 1989-1999

	Average Annual Net Migration Rate [1]	Percent Change in Population
Between East and West	-6.6	-7.2
From Abroad	2.3	2.5
Total Net Migration	-4.3	-4.7

Source: Burda and Hunt (2001) and staff calculations.
[1] Per 1,000

[16] See Burda and Hunt (2001) for a very extensive analysis of this episode.

C. What Causes Migration?

9. **There are four main economic and non-economic categories of migration**. First, there are refugees—migrants who move for a number of non-economic reasons: those attempting to escape political, social, or religious repression and those fleeing war or natural disasters. Second, there are migrants who move temporarily to another region for educational or training purposes. Third, some workers temporarily relocate to another region, in response to economic shocks in either the sending or the receiving country. For example, a construction worker might seek temporary work in another region in response to a short-term construction boom in that region. Finally, there are workers who permanently relocate. These workers tend to view their long-term, economic prospects as relatively better in host locations compared to their own country.[17] This paper focuses on the latter two categories—those who migrate for economic reasons, either temporarily or permanently.

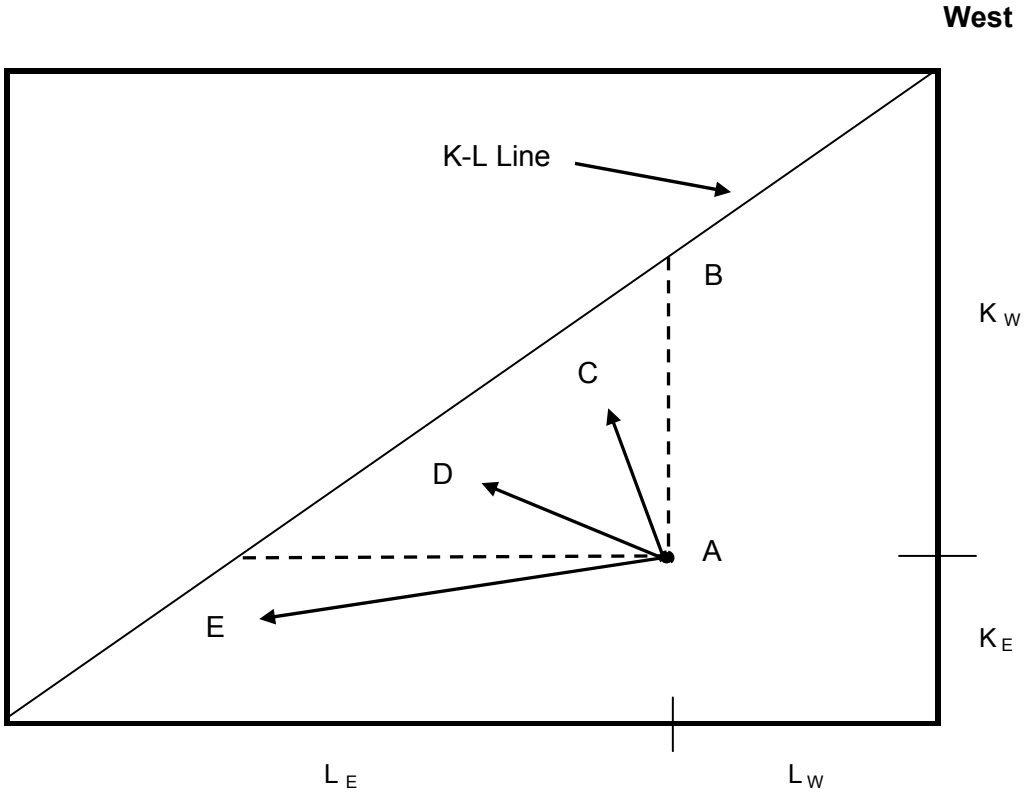
10. **For those who migrate for economic reasons, expected income or wage differentials are the primary determinants, although cultural factors also play a role**. Economic theory predicts that labor will move from a region with low wages and incomes and high unemployment to regions with relatively higher wages and incomes and lower unemployment. However, several factors complicate this prediction. First, there are cost barriers to moving. This indicates that the wage rate or the income level must exceed some threshold level before outward migration begins to occur. Second, there are also informational costs regarding the labor market in the destination country. This leads to an inverted U-shaped emigration pattern, whereby migration begins slowly, increases rapidly when information about employment conditions flows back to the sending country from previous migrants, and then tapers off once labor markets in the two countries converge. Third, there are important cultural and language differences to account for. This is consistent with Decressin and Fatas (1995), who show that labor mobility among European countries is much lower than among U.S. states and, therefore, that most region-specific shocks in Europe are absorbed by changes in participation rates rather than by labor migration. Finally, as demonstrated by Fidrmuc (2004), region-specific shocks may induce both inward and outward migration. For example, a sector-specific shock in one region may induce an inflow of high-skilled workers from other regions, while producing an outflow of low-skilled workers.

11. **Growth and economic geography theories offer broader explanations for movements of goods and factors.** To illustrate the basic economic concepts, consider two hypothetical regions—East and West (Figure 1). The two regions were effectively separated

[17] With respect to the fourth category, the literature tends to focus on the causes and consequences of high-skilled migration and the so-called "brain drain" and "brain gain" phenomena.

for some time, either because transport costs were prohibitively high or because trade in goods and factors was explicitly prohibited. Both regions have access to the same technology. However, the two regions have different endowments of labor (shown on the horizontal axis) and capital (shown on the vertical axis). More specifically, labor is relatively abundant in the East, while capital is relatively scarce (point A). Similarly, wage rates should be relatively low in the East, and the return on capital should be relatively high.

Figure 1. Capital, Labor, and Convergence Between East and West



12. **Now consider what happens when trade barriers are removed**. The neoclassical growth models—of Solow (1956) and others—predict that convergence will occur between East and West, with capital flowing toward the East and labor moving to the West until capital-to-labor ratios are equalized across countries. Thus, the convergence process is depicted by a movement toward the "K-L line" in Figure 1, and total convergence results in a point on the K-L line. The models also predict convergence of factor prices, with average wage rates increasing and average rental rates for capital falling in the East, until they reach Western levels.[18] The degree to which factors of production are mobile and the relative

[18] Since the West is much larger than the East, the impact of convergence on factor prices in the West is negligible.

mobility between factors will determine how long the convergence process will take and how each factor will adjust. For example, suppose that capital is perfectly mobile and that labor is not. In this case, capital from the West will relocate instantly to the East, and convergence will take place at point B. Under this scenario, there would be no movement of labor between East and West.

13. **In reality, capital is not perfectly mobile and labor is able to relocate**. Setup costs and capital market imperfections imply that capital is less-than-perfectly mobile, although capital is likely more mobile than labor. In this case, there will be some shedding of labor, with net migration from East to West. That is, convergence will take place at a point like C. The more that capital is immobile or the more that labor is mobile, the further that point C will lie below and to the left of point B. In addition, other factors, such as government policies and endowments of human capital, land, and other natural resources, will affect where point C lies on the K-L line. Nevertheless, the neoclassical models predict that—if technologies are identical in both regions—convergence will eventually take place, with capital-to-labor ratios, wages, rates of returns on capital, and incomes becoming equal.

14. **Newer theories of economic growth suggest the possibility of permanent economic *divergence*.** The endogenous growth theories suggest that returns to capital—see Romer (1986)—do not have to be diminishing and that economic convergence is not assured. That is, under certain conditions, there is a possibility of permanent divergence in wages, incomes, and labor productivity.[19] In Lucas (1988), human capital has increasing returns to scale and offers the possibility that highly-skilled or highly-educated workers might accumulate in some regions (at the expense of other regions), leading to permanent divergence. Similarly, as in Romer (1990), there are models where increasing returns are achieved via research and development, and they also suggest the possibility of permanent—and, perhaps, ever-widening—divergence.

15. **The "new economic geography" (NEG) models offer an even richer set of possibilities**.[20] In general, NEG models emphasize the existence of two strong, opposing forces. First, there are agglomeration or locational effects that tend to pull capital and labor (together) to central locations. These agglomeration forces come from a number of sources: (i) ports, roads, and other infrastructure, (ii) efficiency gains from firms locating near other firms that provide them with intermediate goods and vice versa, (iii) efficiency gains from firms locating near large markets or large pools of labor, (iv) utility gains from consumers

[19] In the context of Figure 1, the long-term equilibrium does not lie on the K-L line, and there will be permanent differences in capital-to-labor ratios, wages, incomes, and returns to capital.

[20] See Krugman (1991) for an analysis of uneven development, and Krugman and Venables (1995) for the importance of economic geography.

finding a larger variety of goods in large population centers, and (v) reduced search costs for laborers locating near "thick" labor markets. On the other hand, these agglomeration tendencies are moderated by poor business climates, congestion and other decreases in quality of life, and transport costs of goods to distant markets. Which force is stronger for a given region—agglomeration or congestion effects—is a complex function of technology and tastes, historical accident, government policies, and institutions.

16. **The NEG theory offers a range of possible outcomes for East and West.** Returning to Figure 1, it is reasonable to assume that firms and populations are initially concentrated in the West.[21] This suggests two possible extremes for changes in capital and labor locations. On the one hand, agglomeration forces could continue to keep capital in the West—near supply and demand centers—once trade barriers are removed. This is depicted by a point like D, where very little capital flows into the East, and convergence is achieved mostly by labor flows from East to West. A much less likely outcome—point E—is where both capital *and* labor flee the East. On the other hand, NEG theories also offer the possibility that the West is relatively overcrowded, making the East look attractive for capital (and, possibly, labor) inflows. Good government policies (such as low taxes, ease of doing business, good public infrastructure) would also help to make capital inflows more likely, and, thereby, reducing the need for labor outflows. This outcome is represented by a point like C.

17. **To summarize, the endogenous growth and NEG models suggest a much broader range of economic outcomes relative to the neoclassical growth models**. Unfortunately, these literatures are still too underdeveloped to make economic predictions or to provide specific policy advice. Nevertheless, the next section of the paper takes a look at recent trends in Latvia with an eye toward understanding whether Latvia is headed toward convergence—with or without major labor outflows—or divergence. It also compares Latvia's recent experiences with those of other countries.

D. Trends in Latvia with Some International Comparisons

18. **Where is Latvia headed and when will emigration end**? While the theoretical literature discussed in the previous section does not offer clear answers to these questions, it does lead to others that can be explored empirically: Is convergence or divergence taking place in Latvia? If wage and income convergence is taking place, what is the nature of this convergence—how much capital is flowing in relative to labor outflows? Is convergence on a sustainable path; that is, what is the nature of capital inflows? Finally, how long is the convergence process likely to take? These questions essentially relate back to issues raised in

[21] For expositional reasons, Figure 1 indicates a sizeable population in the East. But, this is not necessary. What is important is that East is *relatively* better endowed with labor; that is, point A lies *below* the K-L line.

Figure 1: Is Latvia heading toward the K-L line, and, if so, is it headed to point B, C, D, or E?

19. **Before turning to the empirical evidence in Latvia, it is interesting to take a quick look at convergence during the age of mass migration discussed in section B**. Despite the massive number of emigrants from many Old World countries between 1870 and 1910, there was little convergence in terms of either real wages or labor productivity (Table 4). In Ireland, for example, despite a loss of more than 40 percent of its workforce, the average wage rate rose very little compared to the average wage in the United States. The same is true for the 5 largest sources of migrants, as relative wages rose only modestly, on average, from 29 percent to 48 percent compared to the United States. Taylor and Williamson (1994) do not attribute these developments to agglomeration effects, where capital and labor are seen as complements. Instead, they argue that land and other natural resources were relatively abundant in the New World, while capital and labor were relatively scarce. Thus, it was natural that both capital and labor would migrate to the New World.[22] Indeed, Taylor and Williamson used a calibrated model to construct a counterfactual case (that of no migration) and to calculate the effects of migration on convergence (Table 5). They conclude that if migration had not occurred, real wages would have been about 30 percent less in Ireland, for example, and labor productivity would have been 20 percent less.

Table 4. Convergence During the Age of Mass Migration, 1870-1910
(ratio, relative to the United States)

	Real Wages		GDP per Worker	
	1870	1910	1870	1910
Denmark	0.31	0.58	0.50	0.55
Ireland	0.43	0.54	--	--
Italy	0.23	0.29	0.39	0.37
Norway	0.24	0.41	0.47	0.44
Sweden	0.24	0.59	0.47	0.47
Average	0.29	0.48	0.46	0.46

Source: Taylor and Williamson (1994) and staff calculations.

[22] Nevertheless, their explanation remains somewhat unconvincing, as it does not explain why convergence of real wages or labor productivity were not complete after 40 years of migration.

Table 5. Impact of Migration on Convergence Measures, 1870-1910
(percent of total change)

	On Real Wages	On GDP per Worker
Denmark	9	5
Ireland	31	20
Italy	23	15
Norway	12	8
Sweden	10	6

Source: Taylor and Williamson (1994).

20. **Returning now to Latvia, this paper uses information on advanced and emerging market countries to estimate the level of capital stock.** Unfortunately, comparable measures of the capital stock are not readily available for the New Member States. Panel regressions on a broad set of countries are used to infer a value for the capital stock in 1994, and then investment data is used to construct estimates of the capital stock for 1995-2004. The aggregate production function can be written as follows:

$$Y = A * K^{\alpha} * L^{1-\alpha}$$
$$Y / L = A * (K / L)^{\alpha}$$

The second equation shows that labor productivity (output per worker) is a function of technology (which includes the effects of human capital) and the capital-to-labor ratio. Table 6 shows the results of estimating this relationship for a cross-section of 62 countries in 1994. The capital-to-labor ratio was obtained from Bosworth and Collins (2003). Two proxies for technology were used—the share of agriculture in GDP was obtained from the World Bank's Social Development Indicators, and the average number of years of schooling was obtained from Barro (2000). Regional dummy variables were included to capture common geographic, social, and economic factors not captured by other explanatory variables. The capital stocks for the NMS in 1994 were then inferred, using known values for output, labor, agricultural shares, educational attainment, and the estimated coefficients in Table 6.[23] Estimates of the capital stock for 1995-2004 were then constructed using national accounts data obtained from the World Bank's Social Development Indicators.

[23] A further assumption was made about where the NMS stand vis-à-vis the regional dummy variables. It was assumed that they have technologies similar to those in Latin American countries. However, assuming that technologies were closer to those in industrial countries does not change the qualitative nature of the subsequent analysis.

Table 6. Estimation Results
(Dependent Variable is log of GDP per Worker in 1994)

Variable	Coefficient	p-value[1]
Constant	**1.037**	**0.05**
Log(Agr Share)	-0.082	0.14
Log(Human Capital)	0.132	0.26
Log(K/L)	**0.783**	**0.00**
OECD	**0.303**	**0.03**
Latin America	**0.204**	**0.04**
East Asia	-0.017	0.87
South Asia	-0.121	0.29
Middle East & N. Africa	0.070	0.48
N = 62 R^2 = .99		

[1] Bolded coefficients and p-values indicate that the estimated coefficient is significantly different from zero at the 5 percent level.

21. **The capital-to-labor ratio in Latvia has increased steadily over the past 9 years** (Table 7). The estimated capital-to-labor ratio—which includes residential and business structures, in addition to stocks of machinery and equipment—increased 125 percent between 1995 and 2004. Moreover, as shown in the last column of the table, the gap between the K/L ratio in Latvia and the EU-15 average narrowed modestly over the same period. The lower rows of the table decompose developments in the K/L ratio. The K/L ratio has increased at an average, annual rate of almost 14 percent. This increase comes entirely from an expanding capital stock—at a 15.3 percent rate per year—which was slightly offset by a modest increase in the number of workers over the nine-year period. It is also interesting to note that the increase in workers came from an increase in the employment rate, as the Latvian labor force shrank, mirroring the net outward migration rates discussed earlier.[24]

[24] It is unlikely that employment rates will increase much further. The unemployment rate has fallen sharply in recent months, and signs of overheating suggest that unemployment may be near or below its natural rate.

Table 7. Convergence in Latvia, 1995-2004

	Latvia	EU Average	Ratio
		(in 2000 US$)	
Capital per Worker in 1995	9,859	119,742	*0.1*
Capital per Worker in 2004	22,237	141,147	*0.2*
		(average annual growth rate)	
Capital per Worker	13.9	2.0	*7.0*
Capital	15.3	2.7	*5.7*
Workers	0.6	0.6	*1.0*
Labor Force	-0.5	0.3	*-1.9*
Employment Rate	1.2	0.3	*4.0*

22. **While Latvia appears to be moving in the right direction in terms of catching up by raising its capital-to-labor ratio and accumulating tangible capital, there are reasons to be cautious in viewing these trends**.

- First, these estimates indicate that Latvia is a long way from reaching convergence with the EU-15. To put these numbers in perspective, consider the amount of capital needed to reach convergence: Latvia would have needed about $164 billion more in capital in 2004 to match EU-average capital-to-labor ratios, or about 1,600 percent of GDP.[25] Alternatively, Latvia would have had to shed about 80 percent of its workforce to reach the EU-average capital-to-labor ratio in 2004. At the current pace of convergence, it will take 30 to 40 years for Latvia to approach EU capital-to-labor ratios.

- Second, the estimates are based on data through 2004. As discussed earlier, there is evidence that the rate of outward migration has picked up sharply since EU accession. This would tend to promote further convergence.

- Third, the recent pace of capital absorption may not be sustainable. The capital stock has grown at double-digit rates over the past few years, a pace exceeding all other New Member States (Table 8).[26] This rate of growth also exceeds the rate of

[25] By comparison, Singapore (discussed below) accumulated nearly $250 billion of capital between 1970 (when its capital-to-labor ratio was similar to Latvia's in 2004) and 2000 (when convergence with the West was largely complete).

[26] It is interesting to note that three NMS (Estonia, Poland, and the Czech Republic) have seen a reduction in their labor forces, which contributes to an increase in their capital-to-labor ratios. As with Latvia, the other NMS have seen their labor forces increase slightly.

capital accumulation in the "newer" Old Member States (upper part of Table 9). It is also striking to observe that capital growth rates in Latvia also surpass those of Korea and Singapore during a period of unprecedented, rapid, and oft-studied periods of factor accumulation (lower part of Table 9). Such a rapid pace of capital accumulation raises concerns about the ability of the economy—households, businesses, and the banking system—to absorb and efficiently allocate such large amounts of capital.[27]

Table 8. Comparisons to Other New Member States, 1995-2004

				Average Annual %Δ in		
	K/L in 1995	K/L in 2004	Ratio	K/L	K	L
Latvia	9,859	22,237	2.3	13.9	15.3	0.6
Estonia	11,960	25,083	2.1	12.2	11.5	-0.3
Slovak Republic	13,885	26,665	1.9	10.2	10.2	0.0
Czech Republic	20,977	37,026	1.8	8.5	7.8	-0.4
Poland	15,337	25,549	1.7	7.4	6.9	-0.3
Lithuania	11,958	18,897	1.6	6.4	7.3	0.5
Hungary	19,851	30,099	1.5	5.7	6.6	0.6
Slovenia	42,279	62,989	1.5	5.4	5.8	0.2

Sources: World Bank Social Development Indicators and staff calculations.

Table 9. Selected Countries: Changes in the Capital-to-Labor Ratio, 1960-2000

				Average Annual %Δ in		
	K/L in 1960	K/L in 2000	Ratio	K/L	K	L
Greece	13,044	71,259	5.5	4.4	5.2	0.8
Ireland	23,524	103,721	4.4	3.8	4.7	0.9
Portugal	14,084	59,254	4.2	3.7	4.7	1.0
Spain	16,455	87,514	5.3	4.3	5.3	1.0
Korea	2,646	58,137	22.0	8.1	11.0	2.7
Singapore	4,880	138,803	28.4	8.8	12.4	3.3

Sources: Bosworth and Collins (2003) and staff calculations.

[27] These issues are discussed further in two companion papers—"Integration, External Imbalances and Adjustment: The Latvian Experience" and "Latvia--Aspects of Rapid Credit Growth".

- Finally, the type of capital that is being accumulated has longer-term consequences for output growth and labor productivity. As Martin and Sanz (2003) discuss in their study of convergence in Greece, Ireland, Portugal, and Spain, the contribution to growth from international spillovers can be quite important. The most direct contribution is through contracts for transfer of technology, but the economic growth literature also stresses two indirect sources of spillovers—foreign direct investment and imports of goods, especially imports of machinery and equipment. Indeed, Martin and Sanz find that the knowledge spillovers through trade account for much of the recent catch-up in the "newer" Old Member States. In this respect, Latvia does not score well, as its imports of machinery and equipment appear to be lagging behind its European neighbors (Table 10).

Table 10. Imports of Machinery 1/
(percent of total imports)

	1995	2000	2004
Hungary	23.2	43.4	44.5
Czech Republic	29.4	31.7	32.9
Estonia	22.1	34.1	28.8
Slovakia	23.9	23.6	25.4
Poland	24.3	26.8	25.2
Slovenia	20.7	22.1	21.5
Lithuania	13.9	15.8	19.3
Latvia	17.6	20.8	18.8

Source: UN COMTRADE.
1/ Excluding cars.

E. The Consequences of Migration

23. **Net outward migration can have important positive effects on emerging market economies**. Following the discussion of the previous section, outward migration can be an integral part of economic development and convergence. First, immigration can reduce the pool of unemployed workers, which has an immediate positive effect on the fiscal budget. Second, on average, the loss of labor raises the capital-to-labor ratio and overall labor productivity, thereby raising average real wages. Third, if workers eventually return to their home country, they can bring back important knowledge and skills gained while working abroad.[28] Finally, worker remittances are an important source of international capital for developing countries – often surpassing other sources of capital inflows (see World Bank (2006a)). However, since remittances may also discourage labor force participation and the

[28] Co, Gang, and Yun (2000), for example, found that Hungarian women earned a wage premium for work experience abroad, while the results were not conclusive for men.

number of working hours of recipients, the initial economic benefits of the remittances can be offset over the longer term.[29]

24. **There are also a number of important undesirable impacts of migration on the originating country**. First, migration of employed workers can lead to a significant loss of tax revenue, which can create pressures to slow or reduce expenditures on infrastructure, education, health care, and pensions. Second, the net economic benefits of migration are not so clear for higher-skilled workers, since there are many possible externalities created by the loss of high-skilled workers and highly educated citizens.[30] On one hand, economic growth is reduced if: (i) other workers lose the opportunity of interacting with higher-skilled workers, either in the workplace or in the educational system, (ii) economies of scale in skill-intensive activities cannot be exploited, or (iii) society misses out on the returns from using public funds to finance education. On the other hand, well-educated workers living abroad can enhance network opportunities for the originating country, leading to better access to technology, capital, and other business advantages.

25. **Although there is a plethora of studies on the consequences of migration, the literature is fairly inconclusive and is hampered by a number of difficulties**. First, as in the case of Latvia, there is a dearth of quality data on migration patterns, both within countries and across countries. OECD countries generally keep track of legal immigrants by originating countries and emigrants by destination country. Therefore, there are limited data on *legal* migration flows and stocks to and from OECD countries. However, this approach underestimates migratory flows to the extent that there is illegal migration to and from OECD countries. In addition, this approach completely ignores migration from developed countries to developing countries and migration among developing economies. Likewise, cross-country data on wages, incomes and unemployment are fraught with mismeasurement and definitional differences. Second, most econometric studies of migration are backward looking, whereas the decision to migrate is almost surely one based on assessing future prospects. Finally, most theories and empirical studies of migration are partial-equilibrium analyses, and they typically do not account for the role of other factors of production, such as the availability of physical capital, human capital, and land. In other words, these studies offer no basis for understanding the underlying macroeconomic causes of migration, and they do not offer any broader policy solutions for addressing the consequences of migration. Conversely, recent advancements in the theory of regional and international development

[29] Nonetheless, Giuliano and Ruiz-Arranz (2005) and Chami, Cosimano, and Gapen (2006), for example, argue that remittances are on balance a net economic gain.

[30] See World Bank (2006a) for a more complete discussion. Also, see Mishra (2006), who concludes "that the losses due to high-skill migration (ceteris paribus) outweigh the official remittances to the Caribbean region".

discussed in section C have important implications for migration, and they offer a much richer set of explanations for factor movements.

26. **At the end of the day, the effects of migration are poorly understood, and there are no easy answers for mitigating its economic impact**. The World Bank (2006a) recently observed that "[m]igration is as complex as it is diverse, so predicting the impact of policy changes will be problematic until more research is done and better data is obtained." Nevertheless, that report discusses several factors that should be considered in formulating migration policy.[31] Those factors can be summarized as follows:

- Since the decision to migrate is both risky and costly, governments should provide information on migration opportunities and risks in order to avoid poor decisions.

- Given that the migration of low-skilled workers is generally a benefit to the originating country, governments might also consider managed migration programs—designed jointly by the origin and destination countries—that lower migration burdens for the poorest of low-skilled workers.

- Many countries with high rates of high-skilled emigration also have poor investment climates. While it is not clear whether poor investment climates cause emigration (or vice versa), it is important to consider whether public infrastructure, government policies, or the business climate more generally is limiting the productive employment of high-skilled workers.

- Post-graduation service requirements in return for access to publicly-financed education can be easily evaded including through emigration, and likely discourage return to the originating country.

- Origin countries can encourage educated emigrants to return by identifying job opportunities, permitting dual nationality, and facilitating the portability of social insurance benefits.

F. Conclusions and Policy Options

27. **Outward migration from Latvia has raised concerns about social and economic stresses, that could intensify in the near future if labor flows increase**. However, as argued above, net outward migration can be viewed as a natural part of economic convergence, since labor shedding raises both the capital-labor ratio and labor productivity.

[31] Similar factors were discussed by Mundende (1989).

So far, Latvia does not appear to be heading toward a scenario where both capital and labor are exiting the country. Rather, capital inflows have been strong, wages have been increasing, and the employment rate has been rising, which has more than offset losses in the overall labor force. Nevertheless, complete economic convergence is a distant prospect, and Latvia faces a number of challenges to achieve a desirable outcome, where convergence is reached in an orderly fashion and without significant loss of population.

28. **With emigration an integral part of economic convergence, measures to stem the tide are unlikely to be successful, while overheating can exacerbate outflows**. Full convergence of capital-labor ratios and wage levels is expected to take many years. To preserve competitiveness in the interim—and avoid the missteps made during German reunification—it is important that wage growth remain anchored to improvements in productivity. Raising local wages—unsupported by productivity gains—in order to deter emigration is unlikely to be effective, especially if cross-country differences in wages are large. Moreover, it should be recognized that an overheated economy or a real estate price boom can facilitate additional outflows (especially those at the lower end of the economic ladder) because higher consumer prices erode the purchasing power of local wages, while steep increases in house prices put home ownership out of reach of those earning local wages.

29. **Several steps can be taken to mitigate any adverse consequences of outward migration**. First, facilitating greater internal mobility would allow workers to shift to sectors where labor shortages are most pronounced. This could be achieved by releasing excess labor in the public sector through productivity improvements and reducing economy-wide hiring and firing costs.[32] Second, increasing the effective labor supply by encouraging greater labor force participation (which is low for males compared with EU15 countries) could be realized through a reduction of the tax wedge on labor income of low-wage earners. Increasing the PIT exemption or granting tax credits for lower income workers could deliver this result. Third, consideration could be given to easing restrictions on the immigration of higher-skilled workers from non-EU countries in order to ease growth bottlenecks while also raising the average skill level of the work force. And fourth, improving the investment climate could encourage capital accumulation to support sustainable wage growth. Doing so will require restoring macrostability, and utilizing EU funds to their best advantage to build human capital, facilitate absorption of new technologies, integrate local firms into multinational production chains, and improve infrastructure for viable sectors.

[32] According to the World Bank's "Doing Business 2007" assessment of countries' business environments, Latvia scores relatively highly overall (24th of 175 countries—up from 31st place in the previous assessment), but is rated poorly (123rd) on employing workers owing to weak grades on difficulties in hiring and firing.

30. **Latvia should also give consideration to designing a longer-term migration plan in conjunction with other countries in order to ease outflows and promote future return**. This could include: (i) Providing information on employment opportunities abroad and risks associated with migration in order to avoid poor decision making; (ii) Considering managed migration programs—designed jointly by the origin and destination countries—that lower migration burdens for the poorest of low-skilled workers; (iii) Resolving problems that could be discouraging the productive employment of high-skilled workers abroad; and (iv) Identifying employment opportunities at home to encourage the return of educated emigrants.

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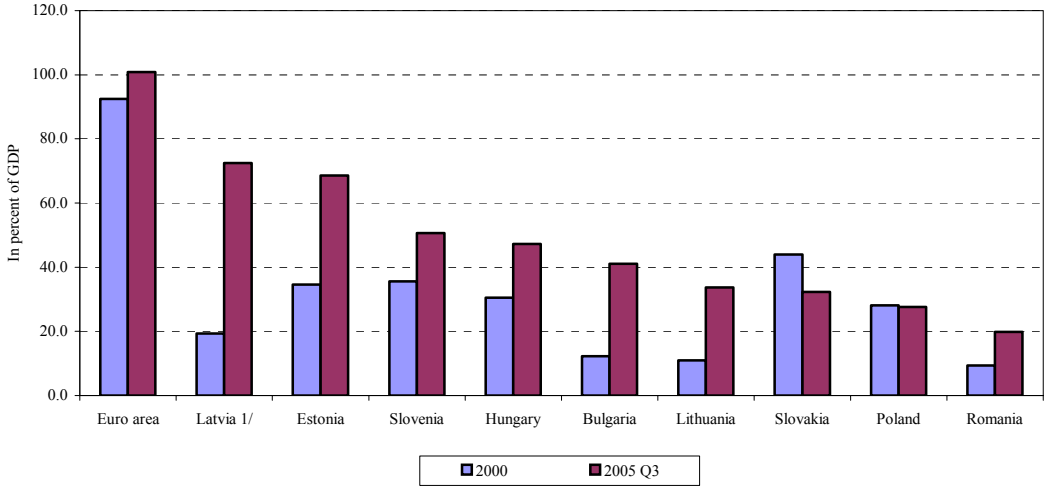
III. Latvia—Aspects of the Rapid Credit Growth[33]

A. Introduction

1. **In recent years Latvia has been experiencing a very rapid increase in bank credit to the private sector**. Over the last five years, annual growth in bank loans to the private sector has been close to 50 percent in nominal terms (while the average annual CPI inflation has been only around 4 percent). This is one of the highest rates among the Central and Eastern European (CEE) countries, most of which have also experienced strong lending flows. As a result, the stock of bank credit to the private sector in relation to GDP has increased in Latvia from 19 percent in 2000 to over 70 percent as of end-March 2006 (Figure 1).

2. **The purpose of this paper is to examine macroeconomic and prudential aspects of the rapid growth of lending in Latvia**. Section B discusses salient features of the composition of credit. Section C presents Latvia's situation with respect to credit growth in a regional context. Section D describes macroeconomic and financial stability implications of credit growth. Section E discusses the outlook and possible policy actions.

Figure 1. CEE Countries: Stock of Bank Loans to the Private Sector



1/ Data for Latvia are for Q1 2006.

Source: Eurostat and FCMC.

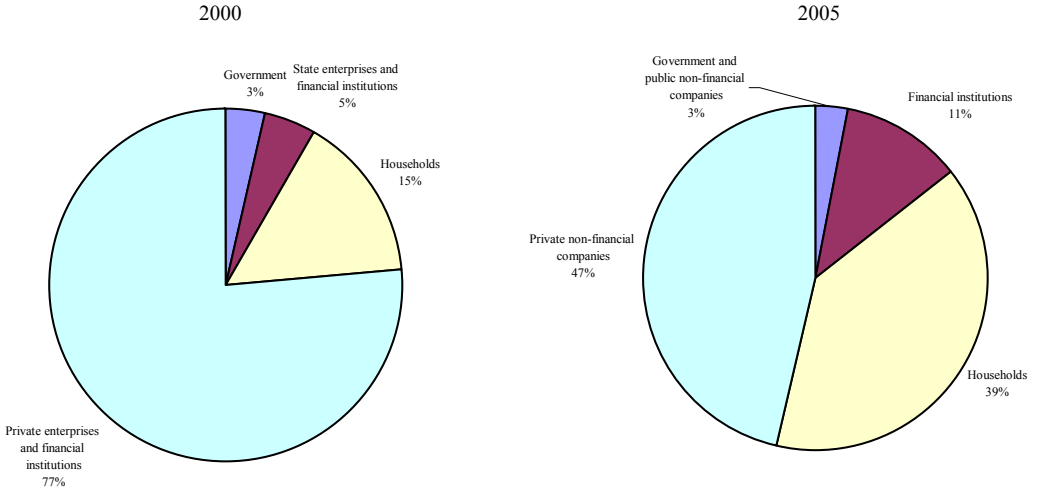
[33] Prepared by Vassili Prokopenko.

B. Composition of Credit

3. **Latvian households have been the main recipients of bank loans in recent years**. Although loans to private nonfinancial corporates still constitute almost half of all loans to residents, the share of loans to households has increased from 15 percent in 2000 to 39 percent in 2005 (Figure 2). More than 70 percent of loans to households are mortgages, while the share of consumer loans is around 15 percent.

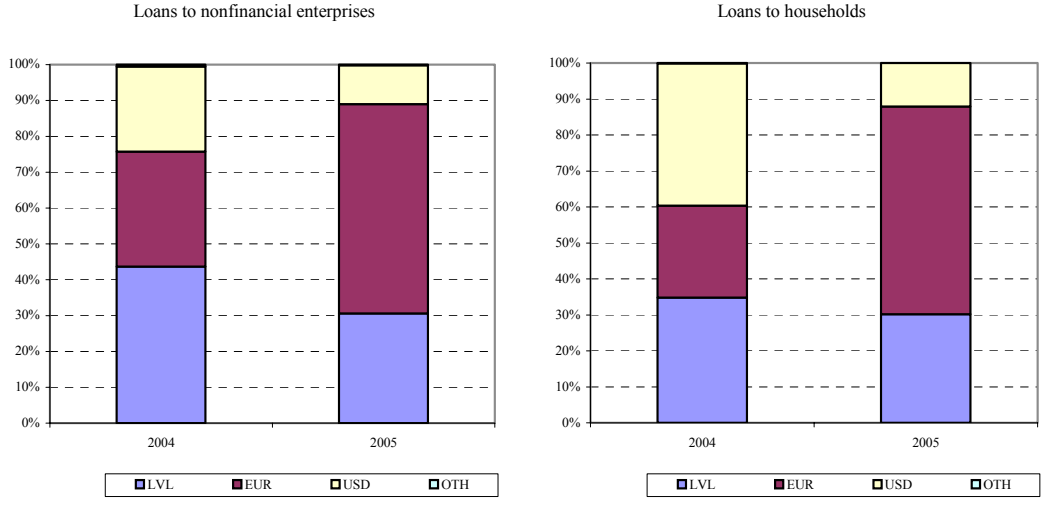
4. **Loans denominated in foreign currency account for around 70 percent of all loans, and the share of lats-denominated loans has been steadily declining**. The high share of foreign currency loans reflects a relatively high nominal interest rate on lats-denominated loans (compared with foreign currency denominated loans), which is due to attempts by the Bank of Latvia to tighten monetary conditions. Credit issued by foreign-owned banks, which are funded primarily in foreign currencies, has been increasing particularly rapidly in recent years. The switch in the anchor currency under the exchange rate peg from the SDR (with a large US dollar weight) to the euro at the beginning of 2005 resulted in a remarkable shift from US dollar-denominated loans to euro-denominated loans (Figure 3). Higher US dollar interest rates compared to euro interest rates also contributed to this shift.

Figure 2. Latvia: Distribution of Bank Loans



Source: FCMC.

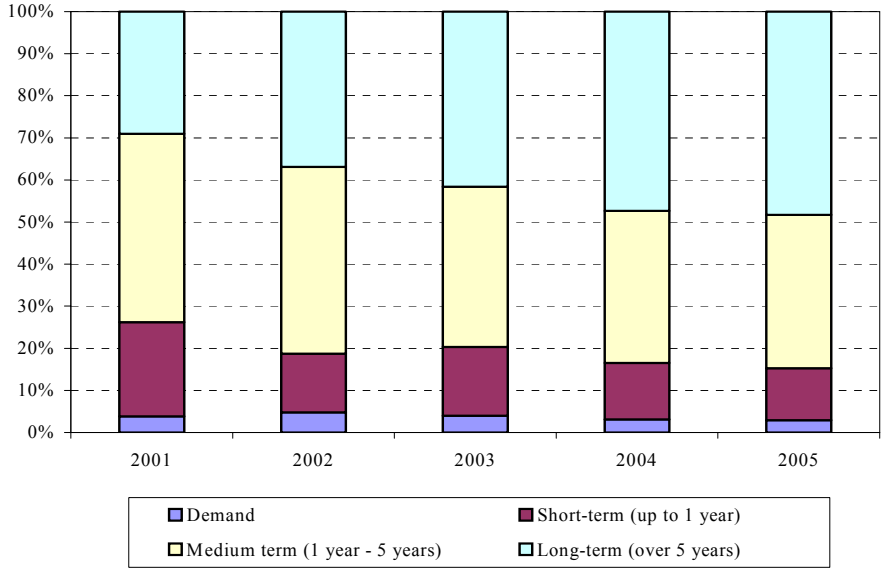
Figure 3. Latvia: Currency Composition of Bank Loans
(in percent of total loans)



Sources: BoL; FCMC.

5. **The maturity structure of loans has been lengthened in recent years**. While loans to nonfinancial enterprises remain mostly short term, the maturity of loans to households has increased. At the end of 2005, loans with a remaining maturity of over five years constituted almost half of all outstanding loans, compared to less than 30 percent of loans in 2001, which mainly reflects an increasing share of mortgages (Figure 4). Despite this lengthening in maturities, long-term loans are typically issued with a relatively short fixed-rate period (one to three years), after which rates are recalculated annually, and linked to either local or euro-area interbank money market rates.

Figure 4. Latvia: Maturity Structure of Bank Loans
(in percent of total loans)



Source: FCMC.

C. Is Latvia an Outlier?

6. **The currently observed phenomenon of rapid credit growth is not unique to Latvia**. Many CEE countries have experienced a sustained expansion in credit to the private sector in recent years. This reflects to a large extent (i) convergence toward the EU-average level of financial intermediation from a state of relative financial under-development, (ii) a clean-up of bad debts from bank balance sheets, and (iii) substantial improvements to legal and institutional frameworks.

7. **Drivers of credit reflect both supply and demand factors.** As securities markets do not play an important role in CEE countries, bank credit remains the main source of external financing for many local enterprises (Table 1).[34] Furthermore, the availability of relatively cheap funding from abroad, especially from the head offices of foreign banks, is an important supply factor in the growth of credit.[35] Some growth in lending might also reflect the greater profit opportunities in the CEE countries than in the EU15, and the increased competition among banks, as banks try to overcome the negative impact on their profitability from declining interest rate spreads by increasing their lending volume. On the demand side, rising income, as well as optimistic expectations of future income and wealth growth (related to actual or anticipated EU accession and euro adoption), has contributed to credit growth in all CEE countries.

8. **Rapid credit growth has also been observed in several euro-area countries in the years before and after adoption of the euro**. Strong credit growth rates in Greece, Ireland, Portugal, and Spain appeared around five years ahead of euro adoption and continued afterwards. Like in the CEE countries today, changes in policies and perceptions owing to euro adoption contributed to these developments: fiscal positions were strengthened, nominal interest rates converged to the EU average levels, financial sectors were deregulated (entry restrictions, interest rate controls, and capital controls were all eliminated), and income growth prospects improved (Schadler *et al,* 2005).

[34] Table 1 shows that non-bank financial institutions (NBFIs) represent a very small share of the total financial system in Latvia. It can be noted, however, that this share has remained broadly stable in recent years, which means that NBFIs have been growing as rapidly as commercial banks. These institutions may potentially become more important providers of loans in the future.

[35] Foreign banks, particularly banks from "old" EU member states, dominate the banking sector in almost all CEE countries.

Table 1. Latvia: Financial System Structure, 2002-05

	Dec-02			Dec-03			Dec-04			Dec-05		
	Number	Assets (Lats m)	% of total	Number	Assets (Lats m)	% of total	Number	Assets (Lats m)	% of total	Number	Assets (Lats m)	% of total
Commercial banks	**22**	**4,247**	**86.7**	**22**	**5,456**	**86.6**	**22**	**7,452**	**86.5**	**22**	**10,366**	**86.0**
Private	21	4,071	83.1	21	5,220	82.9	21	7,135	82.9	21	9,897	82.1
Domestic	12	2,179	44.5	12	2,644	42.0	13	3,722	43.2	13	4,379	36.3
Foreign	9	1,893	38.6	9	2,575	40.9	8	3,413	39.6	8	5,518	45.8
State-owned	1	175	3.6	1	236	3.8	1	317	3.7	1	469	3.9
Branches of foreign banks	**1**	**176**	**3.6**	**1**	**261**	**4.1**	**1**	**399**	**4.6**	**1**	**577**	**4.8**
Nonbank financial institutions	**98**	**478**	**9.8**	**122**	**583**	**9.3**	**132**	**761**	**8.8**	**111**	**1,109**	**9.2**
Credit unions	26	3	0.1	28	4	0.1	32	5	0.1	34	6	0.1
Leasing companies	24	305	6.2	23	355	5.6	28	482	5.6		705	5.9
Electronic Money institutions	0	0	0.0	0	0	0.0	0	0	0.0	2	0	0.0
Securities companies												
Securities brokerage companies	8	3	0.1	6	4	0.1	6	5	0.1	5	4	0.0
Investment management companies	6	1	0.0	8	4	0.1	10	2	0.0	10	8	0.1
Investment funds	9	12	0.3	16	27	0.4	15	36	0.4	17	77	0.6
Life insurance companies	6	32	0.7	6	35	0.5	5	30	0.4	5	39	0.3
General insurance companies	14	94	1.9	13	109	1.7	12	125	1.5	12	150	1.2
Pension funds (Tier III)	4	16	0.3	5	21	0.3	5	27	0.3	6	38	0.3
State funded pension scheme (Tier II)	1	12	0.3	17	26	0.4	19	48	0.6	22	83	0.7
Total financial system	**121**	**4,901**	**100.0**	**145**	**6,300**	**100.0**	**155**	**8,611**	**100.0**	**134**	**12,052**	**100.0**

Source: Financial and Capital Market Commission, Central Statistical Bureau

9. **However, the speed of credit growth in Latvia has been one of the fastest among the CEE countries**. In addition to Latvia, the speed of lending has been particularly strong in the other two Baltic states and Bulgaria (Figure 1). These four countries recorded average real credit growth rates of over 20 percent annually during 2000-05, which is significantly higher than in other new EU member states or EU accession states.

10. **One possible explanation for this heterogeneity in credit growth rates among the CEE countries is differences in exchange rate regimes**. Latvia has a narrow exchange rate band, while Bulgaria, Estonia, and Lithuania all maintain currency board arrangements. It is likely that fixed exchange rate regimes contributed to higher credit growth by encouraging lending in foreign currency at relatively lower interest rates under the perceived absence of any foreign exchange rate risk associated with such borrowing (Boissay *et al.* [2005]). In addition, the prudential regulations in some of these countries, including Latvia, afford the euro favorable treatment, sometimes like a domestic currency, in calculating the net open positions in foreign currencies. Indeed, the share of foreign currency loans is higher in Latvia and in other CEE countries with fixed exchange rate regimes.

11. **Several recent empirical studies have confirmed that Latvia is one of the CEE countries where the ratio of credit to GDP has already come close to the level justified by macroeconomic variables**. Using the methodology of Schadler *et al* (2005), Tiffin (2006) updated the estimates of equilibrium credit to GDP ratios for a group of CEE countries, which showed that Latvia's actual credit ratio in 2005 was significantly closer to its predicted equilibrium value than in other CEE countries except Estonia (Table 2).[36] Egert *et al* (2006) applied a somewhat extended methodology and found that Latvia and a few other CEE countries, namely Bulgaria, Estonia, Hungary, and Slovenia, had already reached in 2004 a level of credit to GDP very close to equilibrium, while Croatia was found to be the only CEE country already at the equilibrium.[37]

[36] Schadler *et al* (2005) applied to the CEE countries the estimated out-of-sample parameters from the euro area equilibrium credit to GDP ratio in. The explanatory variables—long-term real interest rate on government bonds and per capita income—sought to capture the cost of credit and the borrower's ability to service debt.

[37] Egert *et al* (2006) also used out-of-sample estimates (from the OECD panels) but extended the considered variables to include GDP per capita, bank credit to the government sector in terms of GDP, short- and long-term nominal interest rates, inflation rates, housing prices, spread between lending and deposit rates, and the presence of a credit registry.

Table 2. CEE Countries: Credit to GDP Ratios

	Actual[1]	Predicted[2]	Deviation[3]
Czech Republic	34.0	88.6	-54.6
Estonia	67.3	77.5	-10.2
Hungary	46.7	80.2	-33.5
Latvia	54.1	78.0	-23.9
Lithuania	30.7	77.0	-46.3
Poland	29.6	72.0	-42.4
Romania	20.9	59.9	-39.0
Slovak Republic	31.9	80.4	-48.5
Slovenia	45.5	90.3	-44.8

Source: Tiffin (2006).

1/ Actual data for end-June 2005.
2/ Equilibrium value predicted based on estimates of the long-term cointegrating relationship from Schadler *et al* (2005).
3/ Deviation of the actual from the predicted level.

D. Macroeconomic and Prudential Implications

12. **Rapid credit growth in Latvia has been accompanied by increased domestic demand, inflation, and current account deficits**. In 2005, economic growth reached 10¼ percent, while core inflation rose to over 5 percent and the current account deficit remained above 12 percent of GDP (notwithstanding the good performance of exports). The impact of credit growth on inflation and the current account deficit in Latvia is amplified by its foreign financing and the distribution of loans mainly to the household sector (Stavrev in SM/05/279).

13. **The rapid increase in loans also poses a serious challenge to the Latvian banking sector**. As numerous cross-country studies have documented, rapid credit growth is the single best predictor of banking crises.[38] Since 2000, credit growth in Latvia has resulted in a significant change in the relative importance of banks' counterparties, which has affected the nature of risks to which banks are exposed. In particular, new risks have emerged in relation to the increasing share of household loans in banks' portfolios (Box 1). Furthermore, several foreign-controlled banks are seeking to expand and maintain market share, leading them to lower lending standards. Box 2 discusses the financial stability implications related to the presence of foreign banks in Latvia.

[38] Goldstein and Turner (1996), Borio and Lowe (2002).

Box 1. Latvia: Emerging Risks of Lending to the Household Sector

The rapid growth in bank loans to households in Latvia has increased the diversification of bank lending portfolios (previously dominated by loans to the corporate sector), but has also exposed banks to new risks. The level of household indebtedness increased from 3 percent of GDP in 2000 to 29 percent of GDP in 2005. Although this ratio is still significantly lower than in Nordic countries (as of end-2004, this ratio was 40 percent in Finland, 56 percent in Sweden, and 103 percent in Denmark), it is already similar to that in some Southern European countries (e.g., Greece and Italy), and is one of the highest among the CEE countries. While the household debt servicing ratio has also been increasing, interest payments reached only 1.3 percent of GDP in 2005, or 3.5 percent of household disposable income.

Increasing household debt could create problems for Latvian banks if the debt servicing capacity of households were to be eroded, for example, by a sharp increase in unemployment. Although higher income households are thought to be the main borrowers, which can partly mitigate this concern, over time competitive pressures are leading to more bank lending to moderate-income households, hence further increasing the risk exposure of banks.

Most new loans to households have been for mortgages, which has increased the exposure of banks to real estate price risk. Strong growth in real estate loans has contributed to the real estate price boom (according to official statistics, real estate prices increased by 43 percent in the 12 months up to June 2005, Table 3). While the Financial and Capital Market Commission (FCMC) reports that more than 60 percent of real estate loans have loan-to-value ratios (LTVs) below 70 percent, a fall in real estate prices could significantly affect the financial condition of many banks. Some banks are actually offering mortgages with LTV ratios above 100 percent. Moreover, the average size of a mortgage loan has grown by approximately 50 percent a year since 2004 and reached an equivalent of US$30,000 in the first quarter of 2006, implying that the size of newly-issued mortgages is significantly larger.

The risk involved in lending to households is compounded for Latvian banks by the predominance of foreign currency denominated and variable rate loans. The share of foreign currency loans to households increased from 50 percent in 2000 to 70 percent in 2005, due to the factors mentioned earlier, while almost all mortgages have variable rates. Of particular concern are:

- *the presumption by borrowers that exchange rate risk no longer exists.*
- *the lack of sufficient awareness of interest rate risks.* Latvian households are exposed to interest rate risk as mortgages typically have a long maturity but only a short fixed-rate period. This effectively creates an additional credit risk for banks, since rising interest rates could subject borrowers to significant increases in debt-servicing obligations.

Box 2. Latvia: Financial Stability Implications of the Presence of Foreign Banks and Reliance on Foreign Financing

Ownership by foreign parents has allowed many Latvian banks to improve their credit risk assessment and management practices. As of end-2005, Latvia had eight banks—accounting for 53 percent of total banking sector assets—which were majority owned by foreigners, including large Swedish, Finnish, and German banks. Several other banks had minority foreign shareholders. Many of these banks receive assistance from their parents with regard to staff training and upgrading software and hardware.

The strong financial position of foreign parent banks operating in Latvia may mitigate some prudential concerns. This is especially so given the very limited share of the Latvian daughters in the overall groups' balance sheets. However, ownership by large foreign parents should not create grounds for complacency, including in the resolution of any potential banking sector distress involving their Latvian subsidiaries. There is no guarantee that foreign owners will always regard themselves as responsible for Latvian banks, especially if they have problems at home, as shown by experiences in several other countries.1/

More generally, rapid credit growth exposes Latvian banks to external developments and risks through a very high and growing reliance on foreign funding. The share of liabilities of Latvian banks to foreign financial institutions increased significantly from 17.9 percent of total liabilities in December 2004 to 27.4 percent in December 2005. A possible adverse shock to external financing conditions, for example an increase in interest rates in the euro area, can lead to increased volatility in funding and higher debt servicing obligations for Latvian borrowers, even if a large share of funding is from parent banks. On the other hand, many banks also have a significant share of non-resident non-MFI deposits. Although most lending continues to be provided by banks dealing primarily with residents, annual growth in lending from banks dealing primarily with non-residents has been substantial since 2002, and the share of loans in total assets of these banks approached 40 percent by end-December 2005 (Tables 4 and 5).

1/ Many foreign banks in Argentina did not receive support from their parent banks at the time of the crisis in 2001; several foreign banks in Eastern Europe have also experienced troubles in recent years: for example, Rijecka bank in Croatia was not rescued by its German owner, Bayerische Landesbank, at the time of difficulties in 2001, partly due to the problems experienced by Bayerische Landesbank itself.

Table 3. Latvia: Financial Soundness Indicators for the Banking Sector, 2000-05
(In percent, unless otherwise indicated)

	Dec-00	Dec-01	Dec-02	Dec-03	Dec-04	Dec-05
Commercial banks						
Capital Adequacy						
Regulatory capital to risk-weighted assets	14.3	14.2	13.1	11.7	11.7	10.1
Regulatory Tier I capital to risk-weighted assets	12.9	12.9	12.1	10.8	10.4	8.8
Capital to assets	8.0	8.4	8.7	8.4	8.0	7.6
Asset Quality						
Annual growth of bank loans	28.5	51.7	30.8	41.6	46.1	59.0
NPLs to gross loans	4.5	2.8	2.0	1.4	1.1	0.7
Provisions to NPLs	63.1	61.7	78.3	89.4	99.1	98.8
NPLs net of provisions to capital	8.0	5.7	2.4	0.9	0.1	0.1
Earnings and Profitability						
ROA (after tax)	1.6	1.5	1.5	1.4	1.7	2.1
ROE (after tax)	18.6	19.0	16.4	16.7	21.4	27.1
Net interest income to total income	32.0	32.1	32.9	33.2	36.6	36.0
Noninterest expenses to total income	59.6	54.3	56.2	57.2	51.8	44.6
Trading income to total income	5.7	5.2	9.2	9.2	8.5	7.2
Personnel expenses to noninterest expenses	23.8	25.2	26.4	25.7	27.9	29.0
Liquidity						
Liquid assets to total assets	41.7	35.0	38.0	33.5	33.7	26.7
Liquid assets to short term liabilities	66.4	65.5	62.1	57.9	58.1	52.3
FX liabilities to total liabilities 1/	73.8	73.6	71.8	71.0	74.6	76.3
FX loans to total loans 1/	69.4	68.5	66.5	67.9	71.7	73.4
Customers deposits to (non-interbank) loans	171.6	142.4	144.5	124.3	116.3	89.1
Sensitivity to Market Risk						
Net open positions in FX to capital 1/	n.a.	5.5	3.7	7.1	5.4	15.0
Net open positions in equities to capital	n.a.	n.a.	n.a.	1.6	2.2	3.9
Nonfinancial Enterprises						
Total debt to equity	119.8	120.0	120.2	124.2	133.8	n.a.
Return on equity	10.9	14.1	13.6	15.9	21.6	n.a.
Earnings to interest and principal expenses	222.7	286.3	270.1	332.0	427.1	n.a.
Households						
Household debt to GDP	3.4	4.6	7.5	12.6	18.6	28.6
Household debt service to GDP 2/	0.4	0.5	0.6	0.7	0.9	1.3
Real Estate Markets						
Real estate prices growth rate 3/	n.a.	n.a.	n.a.	n.a.	16.0	43.0
Residential real estate loans to total loans 4/	7.0	7.7	11.2	16.2	21.0	25.1
Commercial real estate loans to total loans 4/	3.5	6.9	7.9	n.a.	10.7	15.2

Source: CSB, BoL, FCMC, Latvian Leasing Association

1/ Including euro-denominated positions.
2/ Interest payments only.
3/ All kind of real estate, including land, residential and commercial property. Data for 2005 are for the first half only (annualized).
4/ Loans to residents only to total loans (including loans to non-residents).

14. **Although the reported financial soundness indicators (FSIs) for Latvian banks are good (Table 3), the emergence of new risks can affect the quality of bank soundness in the future**. The significant decline in the aggregate capital adequacy ratio from 11.7 percent in December 2004 to 10.1 percent in December 2005 reflected to some extent the decrease in the minimum required ratio and the associated reallocation of bank assets.[39] The quality of bank portfolios is very strong (NPL ratio is low and declining), though this may partly reflect the very rapid pace of credit growth, which makes NPLs a lagging indicator, and almost all NPLs are fully provisioned. Despite the contraction in the interest rate spread, profitability of banks remains high and is even increasing, which reflects both the growth in loan volumes and the growth in non-interest income. Liquidity ratios, however, have been on a downward trend. Direct exposure to the exchange rate risk significantly increased in 2005, as the net foreign exchange open position (including the euro) to capital almost tripled from 5.4 percent in December 2004 to 15 percent in December 2005. This increase in the net open foreign exchange positions is likely to have resulted from a significantly lower capital charge on euro exposures, coupled with the absence of a prudential limit on such exposures, in effect from the beginning of 2005.[40]

15. **With the notable exception of liquidity ratios, most FSIs for banks dealing primarily with residents are very similar to those for banks dealing primarily with non-residents** (Tables 4 and 5). Although the composition of balance sheets of "resident" banks differs quite substantially from that of "non-resident" banks (i.e., the latter have a larger share of FX-denominated assets and liabilities, and a significantly lower share of loans), both groups have similar indicators of capital adequacy and profitability. The share of loans in total assets of "non-resident" banks remains relatively low (around 40 percent), but these banks are expanding their portfolios of mortgage loans, funded to some extent by short-term deposits, which raises concerns of maturity mismatch.[41] More generally, as the quality of loans issued by these banks is lower than the quality of loans of "resident" banks, rapid growth in lending by "non-resident" banks is a source of concern.

[39] In November 2004, the minimum capital adequacy ratio was lowered from 10 to 8 percent. Since then, the capital adequacy ratio in several banks has fallen below the previous minimum.

[40] The euro is excluded from the calculation of the net foreign exchange open position, hence the required capital charge for exchange rate risk of eight percent of the net open position applies to the net open position in all currencies except the euro. However, there is an additional capital charge for net positions in euro equal to one percent for lats-matched positions and eight percent for lats-unmatched positions. This implies that the euro is treated almost like the lats.

[41] All but one bank in Latvia is reported to be engaged in issuing mortgages.

Table 4. Latvia: Financial Soundness Indicators for the Banks Dealing Primarily with Residents, 2000-05 1/
(In percent, unless otherwise indicated)

	Dec-00	Dec-01	Dec-02	Dec-03	Dec-04	Dec-05
Capital Adequacy						
Regulatory capital to risk-weighted assets	14.6	15.6	13.2	11.1	11.1	9.5
Regulatory Tier I capital to risk-weighted assets	12.6	13.5	11.7	9.7	9.3	7.8
Asset Composition and Quality						
Share of loans in total assets	53.0	64.1	67.5	73.1	77.6	80.8
Annual growth of bank loans	61.2	12.6	96.0	44.5	46.1	67.6
Sectoral distribution of loans (in % of total loans, stock)	100.0	100.0	100.0	100.0	100.0	100.0
Resident non-financial enterprises	72.5	68.2	56.9	52.2	50.0	46.4
Households	12.4	13.8	19.5	24.4	31.4	35.7
General government	0.0	0.0	0.0	2.0	0.0	0.0
Other residents	11.3	13.8	18.3	15.5	13.6	13.9
Non-residents	3.8	4.2	5.2	5.8	5.0	4.0
NPLs to gross loans	4.4	3.2	1.4	1.1	0.9	0.6
NPLs net of provisions to capital	11.4	7.7	1.4	0.5	-0.9	-0.4
Earnings and Profitability						
ROA (after tax)	1.4	1.3	2.0	1.5	1.8	2.0
ROE (after tax)	14.4	13.5	19.4	16.0	21.9	27.4
Net interest income to gross income	34.0	35.0	35.2	36.8	37.9	35.3
Noninterest expenses to gross income	3.4	3.4	3.5	4.2	3.7	4.2
Income from operations with non-residents to total income	11.5	7.8	11.2	11.3	11.2	11.2
Liquidity						
Liquid assets to total assets	29.8	24.0	22.7	16.9	15.0	14.1
Liquid assets to short term liabilities	50.3	45.4	43.6	39.7	39.9	38.6
FX liabilities to total liabilities 2/	58.1	53.5	55.4	56.1	61.0	68.6
Sensitivity to Market Risk						
Net open positions in FX to capital 2/	n/a	2.6	2.1	6.4	4.1	16.8
Memorandum items						
Number of banks dealing with residents	9.0	8.0	9.0	9.0	8.0	8.0
Assets of banks dealing with residents/Total banking systen	46.8	34.0	49.5	51.1	51.3	59.2
Capital of banks dealing with residents/Total banking syster	53.2	39.9	53.2	49.8	53.5	59.0
Non-resident deposits/Total non-MFI deposits of banks dea	14.7	7.8	14.3	12.8	12.1	9.9

Source: Bank of Latvia, Financial and Capital Market Commission

1/ Banks dealing with residents are defined as banks in which non-resident non-MFI deposits are below 20 percent of their assets.
2/ Including euro-denominated liabilities/positions.

Table 5. Latvia: Financial Soundness Indicators for the Banks Dealing Primarily with Nonresidents, 2000-05 1/
(In percent, unless otherwise indicated)

	Dec-00	Dec-01	Dec-02	Dec-03	Dec-04	Dec-05
Capital Adequacy						
Regulatory capital to risk-weighted assets	14.0	13.3	12.9	12.6	12.6	12.2
Regulatory Tier I capital to risk-weighted assets	13.2	12.6	12.7	12.3	11.9	10.7
Asset Composition and Quality						
Share of loans in total assets	27.7	37.8	28.6	30.8	32.8	38.6
Annual growth of bank loans	-4.3	117.7	-26.1	34.7	46.1	37.5
Sectoral distribution of loans (in % of total loans, stock)	100.0	100.0	100.0	100.0	100.0	100.0
Resident non-financial enterprises	47.6	46.4	51.2	44.2	37.3	32.9
Households	19.1	15.7	22.1	27.4	27.5	33.5
General government	0.1	0.0	0.0	0.0	0.0	0.0
Other residents	2.6	14.9	2.0	2.1	1.4	3.0
Non-residents	30.6	23.0	24.7	26.3	33.8	30.6
NPLs to gross loans	4.9	2.5	3.2	2.0	1.8	1.0
NPLs net of provisions to capital	4.2	4.4	3.7	1.4	1.1	0.6
Earnings and Profitability						
ROA (after tax)	1.7	1.7	1.1	1.4	1.7	2.2
ROE (after tax)	22.3	23.9	13.8	17.5	21.0	26.8
Net interest income to gross income	30.3	30.2	30.1	29.3	35.1	36.7
Noninterest expenses to gross income	4.9	5.0	6.1	6.3	6.5	5.7
Income from operations with non-residents to total income	44.0	44.3	50.1	51.5	56.3	56.2
Liquidity						
Liquid assets to total assets	51.3	40.3	52.9	50.8	53.3	44.8
Liquid assets to short term liabilities	76.8	72.0	77.1	69.8	68.7	63.1
FX liabilities to total liabilities 2/	86.2	83.0	87.6	86.5	88.8	87.7
Sensitivity to Market Risk						
Net open positions in FX to capital 2/	n/a	7.2	5.9	7.7	6.8	13.0
Memorandum items						
Number of banks dealing with non-residents	13.0	15.0	14.0	14.0	15.0	15.0
Assets of banks dealing with non-residents/Total banking sy	53.2	66.0	50.5	48.9	48.7	40.8
Capital of banks dealing with non-residents/Total banking s	46.8	60.1	46.8	50.2	46.5	41.0
Non-resident deposits/Total non-MFI deposits of banks dea	76.4	67.0	81.6	82.3	82.3	78.4

Source: Bank of Latvia, Financial and Capital Market Commission

1/ Banks dealing with non-residents are defined as banks in which non-resident non-MFI deposits are above 20 percent of their assets.
2/ Including euro-denominated liabilities/positions.

16. **With capital adequacy ratios declining in recent years, stress tests implemented by the authorities point to a decline in the capacity of banks to absorb a modest reduction in credit quality**. Using end-2005 data, a hypothetical 4 percentage point increase in the share of NPLs in total loans would lower the CARs of six banks, accounting for more than 65 percent of the sector's assets, below the prudential minimum of 8 percent. A similar-sized shock performed on mid-2005 data found that only two banks, with a market share of less than 20 percent, would have seen their CARs fall below 8 percent.[42]

E. Outlook and Policy Options

17. **Strong growth in lending can be expected to continue in the near future**. Notwithstanding some expected moderation from extremely rapid rates of recent years, lending to households is likely to remain buoyant. The stock of bank loans to households was 29 percent of GDP in Latvia at the end of 2005, compared to the EU average of around 60 percent of GDP. The per capita stock of household loans in Latvia was only 1,497 euros as of December 2005, which was around nine times lower than the EU average. With the expectation that GDP growth rates will be higher than the EU average, lending in Latvia can be expected to grow faster in order to "catch up" with the average EU levels of financial intermediation.[43]

18. **As scope for the effective use of monetary policy to slow down lending is extremely limited by the fixed exchange rate regime and the open capital account, making greater use of tax-based measures can be instrumental in addressing the mounting macroeconomic risks related to the rapid credit growth**.[44] In addition to tightening the stance of fiscal policy, consideration should be given to specific measures in the area of taxation of real estate transactions, which could slow down house price inflation and the expansion of mortgage lending. In particular, taxation of the realized capital gains on personal real estate holdings should be increased. Currently, these gains are taxed only if the real estate is resold within one year after the date of purchase. Extending this period from one

[42] Bank of Latvia (2005).

[43] Periodic surveys suggest that 30 percent of households can afford a mortgage, against only 14 percent having one as of end-2005.

[44] Measures taken so far in the area of monetary policy have produced mixed results. In particular, the increases in the refinancing rate of the Bank of Latvia have pushed up lats money market rates as intended but also stimulated an increase in bank funding from abroad and a switch from lats to cheaper euro-denominated loans. The increases in the rate of required reserves and the broadening of the definition of the reserve base seem to have had only short-term dampening effects on the rate of credit growth, though the broadening of the reserve requirement base to encompass long-term liabilities was a welcome step, as it created a more level playing field between domestic and foreign banks. At the time of the Article IV mission, the Bank of Latvia was considering increasing the rate of liquidity requirement. However, such a move might only put some "sand in the wheels" but not appreciably slow credit owing to still sizable margins on bank loans, the scope for "special" transactions with foreign parent banks, and the shifting of borrowing to non-bank financial institutions and off-shore.

to three years would be a step in the right direction. In addition, more accurate reporting of the transaction price in the land register should be enforced, in order to correctly measure capital gains and assess the base for the real estate transfer tax.[45]

19. **Although financial soundness indicators are good at present, several prudential policy actions are warranted to reduce the growing exposures of banks to credit and market risks**. In the area of regulation, many measures to address the risks involved in the rapid growth in mortgages (including capital or provisioning requirements, or limits on the loan-to-value ratio (Box 3)) are either unavailable in the EU context or are likely to be ineffective.[46] However, consideration should be given to treating the euro in the same manner as any other foreign currency in the calculation of net foreign currency open positions. In light of the growing currency mismatches and the revision in the euro adoption timetable, inclusion of euro-denominated activities into the foreign exchange open position would increase capital coverage and encourage a reduction in banks' direct euro exposures. With regard to supervision, the Latvian authorities should maintain high standards in the supervisory framework.[47] Some refinements to the stress testing framework of the Bank of Latvia may also be helpful. Specifically, efforts should be made to design stress tests that include scenario simulations internalizing feedback relationships among macroeconomic variables, borrower solvency, and the level of bank capital. Steps should also be taken to overcome data shortcomings, including in particular the collection of data on the income of household borrowers and the foreign currency earnings of households.

[45] According to anecdotal evidence, the market value of real estate properties can be up to ten times higher than the value shown in the land register.

[46] The EU's Capital Requirement Directive, which governs the implementation of the Basel 2 capital framework in EU countries from 2007, will significantly limit the scope for discretion by national supervisors with respect to capital charges for all banks. However, Pillar 2 of Basel 2 permits national supervisors, including the FCMC, to use discretion in setting capital adequacy requirements for individual banks that are viewed as outliers with respect to risk characteristics of their portfolios. The application of International Financial Reporting Standards which rely on "fair value" accounting already limits the scope for use of provisioning requirements. As to the loan-to-value ratio (LTV), mandatory limits are relatively easy to evade and also have other disadvantages as discussed in Box 3.

[47] These standards fared well in the assessment of compliance with the Basel Core Principles for Effective Banking Supervision, carried out in the context of the FSAP in 2001. An FSAP Update is currently scheduled to take place in early 2007.

Box 3. Loan-to-Value Ratio in Mortgage Lending: Key Considerations

Introducing a binding cap—or tightening an already existing cap—on the LTV ratio applied to residential or commercial properties can potentially be a useful policy tool to slow rapid growth in mortgages and/or housing price increases. From a macroeconomic perspective, lowering the cap during a lending or real estate boom can help avoid an excessive procyclical expansion. Reducing the ability of banks to lend against the rising value of the real estate may impinge on the ability of some potential buyers to purchase real estate From a prudential perspective, a mandatory maximum LTV ratio well below 100 percent also better protects banks against the risk of delinquency on mortgage loans in the case of falling real estate prices.

However, the effectiveness of LTV limits is questionable. First, it is not easy to recognize developing imbalances in advance (the LTV is likely to be tightened only late in the cycle, reducing its counter-cyclical benefits). Second, such a limit affects mainly the poorest households which may not be able to provide a large of downpayment (social and political interests in promoting long-term home ownership need to be taken into account). Third, people would attempt to circumvent such a cap by either using non-bank financial institutions or direct off-shore borrowing. Finally, compliance with the LTV limit would be difficult to enforce as neither borrowers nor lenders have an interest in abiding by the regulation.

20. **In addition, measures could be taken to improve the operating environment for bank lending. These should include the following**:

Increase risk awareness

There is scope for increasing borrowers' awareness of the risks involved in lending. In several other CEE countries, for example, Hungary and Poland, and also in more advanced countries like Austria and Norway, banks are required to draw every client's attention to the risks associated with borrowing in foreign currency, sometimes through a special notification leaflet before the lending process even gets under way, and sometimes by requiring potential borrowers to sign a form stating that they are aware of the risks. The Latvian authorities should consider introducing a similar requirement for banks, and also launch a broad public campaign to highlight all the main risks (credit, interest rate, and exchange rate risks) involved in lending.

Transform the credit registry

The existing bad-debtor credit registry should be transformed into a comprehensive database covering all borrowers. By strengthening the information base on borrowers, this measure would help banks make sounder lending decisions.

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